149 U.S. 287

RECORD, CASE No. 13,832.

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1892.

TERM No., 225.

EDWARD W. LEGGETT, APPELLANT,

vs.

THE STANDARD OIL COMPANY.

APPEAL FROM THE CIRCUIT COURT OF THE UNITED STATES FOR THE SOUTHERN DISTRICT OF NEW YORK.

FILED OCTOBER 19, 1889.

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1 [L. S.] The President of the United States of America to the Standard Oil Company, Greeting:

You are hereby commanded that you personally appear before the judges of the circuit court of the United States of America for the southern district of New York, in the second circuit court, in equity, on the first Monday of May, A. D. 1889, wherever the said court shall then be, to answer a bill of complaint exhibited against you in the said court by Edward W. Leggett, and do further and receive what the said court shall have considered in that behalf, and this you are not to omit under the penalty on you of two hundred and fifty dollars.

Witness Honorable Melville W. Fuller, Chief Justice of the Supreme Court of the United States, at the city of New York, on the ninth day of April, in the year one thousand eight hundred and eighty-nine, and of the Independence of the United States of America the one hundred and eleventh.

TIMOTHY GRIFFITH, *Clerk.*

EDWIN M. FELT,
Complainant's Sol'r.

The defendant is required to enter appearance in the above cause in the clerk's office of this court on or before the first Monday of May, 1887, or the bill will be taken *pro confesso* against it.

T. G., *Clerk.*

2 [Endorsed:] I hereby certify that on the 9th day of April, 1887, at the city of New York, in my district, I personally served the within subpœna upon the within-named Standard Oil Company by exhibiting to Joel F. Freeman, treasurer of said company, the within original and at the same time leaving with him a copy thereof. Dated April 9, 1887. M. T. McMahon, United States marshal, southern district of New York, by Geo. H. Holmes, deputy. Received U. S. marshal's office, S. D. N. Y., April 9, 1887. U. S. circuit court Filed April 12, 1887. Timothy Griffith, clerk.

3 United States Circuit Court, Southern District of New York.

EDWARD W. LEGGETT, Complainant,
against
THE STANDARD OIL COMPANY, Defendant. } In Equity.

To the honorable the judges of the circuit court of the United States for the southern district of New York:

Edward W. Leggett, a citizen of the United States, residing in the State of New York, brings this his bill of complaint against the Standard Oil Company, a corporation duly incorporated, organized, and doing business under and in pursuance of the laws of the State of Ohio.

And thereupon your orator complains and says—

That your orator is a citizen of the United States, residing in the

State of New York, and was and is the original and first inventor of a new and useful improvement "in lining oil barrels with
4 glue," fully described in the letters patent hereinafter mentioned; which said improvement was not used by others and has not been patented or described in any printed publication and had not been in public use or on sale for more than two years prior to his application for a patent therefor, hereinafter set forth.

And the respondent, the said Standard Oil Company, is a corporation created by and existing under the laws of the State of Ohio and having a place of business in the city and State of New York and district aforesaid.

And your orator further shows unto your honors that thereafter your orator, so being the first and original inventor of said improvement, did, on the 29th day of September, 1873, apply in due form to the Commissioner of Patents of the United States for letters patent of the United States for such improvement, and, having fully and in all respects complied with all the requirements of the law on that behalf, letters patent therefor were duly issued to your said orator, Edward W. Leggett, by the United States, under the seal of the Patent Office, signed by the Secretary of the Interior and countersigned by the Commissioner of Patents, bearing date the 21st day of October, 1873, and numbered 143,770, whereby there was granted and secured to him, his heirs and assigns, for the term of seventeen years from the 21st day of October, 1873, the full and exclusive right to make, use, and vend the said invention throughout the United States and the territories thereof, as by reference to a certified copy of said letters patent in court to be produced will more fully and at large appear.

And your orator further shows unto your honors that your orator, Edward W. Leggett, having for good and lawful cause duly surrendered said letters patent to the Commissioner of Patents and having made due application therefor and having in all things complied with the acts of Congress in such case made and provided,
5 did, on the 10th day of March, 1874, obtain new letters patent, being for the same invention, for the residue of said term of seventeen years from the date of the original patent, to wit, the 21st day of October, 1873, which new letters patent were marked reissue No. 5785 and were issued in due form of law under the seal of the Patent Office of the United States, signed by the acting Secretary of the Interior and countersigned by the Commissioner of Patents, and bearing date the 10th day of March, 1874, as by reference to the last-mentioned reissue of letters patent or a certified copy thereof in court to be produced will more fully and at large appear.

And your orator further shows that by virtue of the premises he is the sole and exclusive owner of said invention and said reissue of letters patent therefor and of all the rights and privileges granted and secured or intended to be granted and secured thereby throughout the United States and the territories thereof, and that the said rights and privileges have been and are of great value to your orator, and thereupon your orator put the said invention into use.

And your orator further shows unto your honors that the defendant herein, well knowing the premises and the rights secured by your orator as aforesaid, but contriving to injure your orator and to deprive him of the benefits which might or otherwise would accrue to him from said invention and without the license, allowance, and against the will of your orator and in violation of your orator's rights, has made and used since said 10th day of March, 1874, in the State of Ohio and elsewhere and still make- and use- the said improvement and invention described and claimed in said reissue of letters patent, all in violation and defiance of the exclusive rights and privileges granted and secured to your orator in or by said letters patent and said reissue of letters patent and in infringe-
6 ment of said letters patent and of said reissue of said letters patent and of the claims therein contained, to your orator's great and irreparable loss and injury, and by which your orator has been and still is being deprived of great gains and profits which he might and otherwise would have obtained.

And your orator further shows to your honors that the said dedefendant, under its corporate name and otherwise, has derived and received and is still deriving and receiving from the aforesaid wrongful use of said invention large gains and profits, but what amount of such gains and profits has been so derived and received by said defendant your orator does not know and cannot set forth, but prays that said defendant may be required to make a discovery as to its use under its corporate name and otherwise of said invention or improvement and of the amount of such gains and profits received by it therefrom or by means thereof.

And your orators further shows unto your honors that the said defendant has been warned and requested to desist and refrain from said infringement and said unlawful and wrongful acts, but that said warning and request and notice have been wholly disregarded by said defendant, and that said defendant still continues said infringement and the unlawful and wrongful acts aforesaid.

In consideration whereof, and forasmuch as your orator can have no adequate relief except in this honorable court, to the end, therefor-, that the said defendant, The Standard Oil Company, may, if it can, show cause why your orator should not have the relief hereby prayed, and may, on its corporate oath and according to the best and utmost of its several and respective knowledge, remembrance, information, and belief, full, true, direct, and perfect answer make to the premises and to all the several matters hereinbefore stated and charged as fully and particularly as if severally and separately interrogated as to each and every of said matters, and that
7 said defendant may be required to make discovery and disclosure of all gains and profits derived and received from such wrongful and unlawful manufacture and use as aforesaid, and that it may be decreed to account for and with and pay over to your orator the profits by it acquired and the damages suffered by your orator from the unlawful and wrongful acts.

And may it please your honors, the premises considered, to grant unto your orator the writ of injunction issuing out of and under

the seal of this honorable court perpetually enjoining and restraining the defendant, The Standard Oil Company, its officers, agents, servants, workmen, employés, and attorneys, each and every of them, from directly or indirectly making, constructing, using, vending, delivering, working, or putting into practice, operation, or use or in anywise counterfeiting or imitating said invention patented as aforesaid, and that your orator may have such further or other relief or order in the premises as shall be just, equitable, and proper and the nature of the case may require; and may it please your honors to grant unto your orator a provisional and preliminary injunction issuing out of and under the seal of this court enjoining and restraining the defendant, its officers, agents, servants, workmen, employés, and attorneys and each and every of them to the same purport, manner, and effect as hereinbefore prayed for in regard to said perpetual injunction.

And may it please your honors, the premises considered, to grant unto your orator the writ of subpœna issued out of and under the seal of this honorable court, to be directed to the above-named defendant, The Standard Oil Company, thereby commanding said company, at a certain day and under a certain penalty therein to be limited, personally to be and appear before your honors in this honorable court and then and there full, true, and perfect answers make to all and singular the premises; and, further, to stand
8 to, perform, and abide such further order, direction, and decree therein as to your honors shall seem meet.

And your orator will ever pray, etc.

EDWARD W. LEGGETT.

EDWIN M. FELT,
Solicitor for Complainant.
SAMUEL C. REED, *Of Counsel.*

UNITED STATES OF AMERICA,
Southern District of New York.

Edward W. Leggett, being duly sworn, says that he is the complainant herein; that he has read the foregoing complaint and knows the contents thereof; that the same is true of his own knowledge except as to the matters therein stated to be alleged on information and belief, and as to those matters he believes it to be true.

EDWARD W. LEGGETT.

Sworn to before me this 8th day of April, 1887.

[L. S.]

E. D. PAXSON,
Notary Public (96), *N. Y. Co.*

9 United States Circuit Court, Southern District of New York.

EDWARD W. LEGGETT
against
THE STANDARD OIL COMPANY } In Equity.

SIR: Please take notice that The Standard Oil Company, the defendant in the above-entitled suit, hereby appears therein by us, its solicitors.

Yours, etc., EVARTS, CHOATE & BEAMAN,
Def't's Solicitors

Office & P. O. address, 52 Wall street, New York city.

To the clerk of the United States circuit court for the southern district of New York.

(Endorsed:) U. S. circuit court, so. dist. N. Y. Edward
10 W. Leggett *vs.* The Standard Oil Co. Notice of app. for defendant. Evarts, Choate & Beaman, def't's solicitors. U. S. circuit court. Filed April 21, 1887. Timothy Griffith, clerk.

11 Circuit Court of the United States for the Southern District of New York.

EDWARD W. LEGGETT
vs.
THE STANDARD OIL COMPANY. } In Equity.

The answer of The Standard Oil Company, defendant, to the bill of complaint of Edward W. Leggett, complainant.

This defendant, reserving to itself all right of exception to the said bill of complaint, for answer thereto saith:

First. Defendant admits that it is a corporation created by and existing under the laws of the State of Ohio.

Second. Defendant admits that letters patent of the United States were issued, bearing date October 21, 1873, numbered 143,770, and purporting to grant unto Edward W. Leggett, the complainant herein, his heirs or assigns, for the term of seventeen years from the said date thereof, the exclusive right to make, use, and
12 vend an alleged new and useful "improvement in process of lining oil barrels with glue," but defendant denies that said alleged improvement had not theretofore been used by others, and denies that the same had not been patented or described in any printed publication, and denies that the said alleged improvement had not been in public use or on sale for more than two years prior to the complainant's application for a patent therefor, and denies that the complainant was the original and first inventor of said alleged improvement.

Third. Defendant admits that reissued letters patent of the United States were issued, bearing date March 10, 1874, numbered

5785, and purporting to grant to Edward W. Leggett, the complainant herein, his heirs or assigns, for the term of seventeen years from the 21st day of October, 1873, the exclusive right to make, use, and vend an alleged new and useful "improvement in lining oil barrels with glue," but defendant denies that the said original letters patent numbered 143,770 were surrendered for good and lawful cause, and denies that the said original letters patent were inoperative or invalid by reason of an insufficient or defective specification, or that any error had arisen therein from inadvertence, accident, or mistake and without any fraudulent or deceptive intention, and denies that the said reissued letters patent were for the same invention as was described and claimed in said original letters patent number 143,770, and defendant alleges that the said reissued letters patent are invalid and void as containing new matter not described and claimed in said original letters patent.

Fourth. Defendant alleges that the complainant was not the original and first inventor or discoverer of the alleged invention and improvement described and claimed as now in the said original and reissued letters patent and attempted to be patented thereby, but that the said alleged invention and improvement or material and substantial parts thereof were, before the assumed or supposed discovery thereof by the complainant, known to and used by the following-named persons at the respective places hereinafter specified, to wit:

13

By Philip Leserman, of New York, at New York and Pennsylvania.

By Geo. H. Hopper, of New York, at New York and Pennsylvania.

By James G. Newcombe, of New York, at New York and Pennsylvania.

By W. P. Thompson, of New York, at New York and Pennsylvania.

By W. W. Beach, of New York, at New York and Pennsylvania.

By W. T. Waddell, of New York, at New York and Pennsylvania.

By H. Koehler, of New York, at New York and Pennsylvania.

By A. J. Pouch, of New York, at New York and Pennsylvania.

By H. H. Rogers, of New York, at New York and Pennsylvania.

By H. A. Hutchins, of New York, at New York and Pennsylvania.

By T. H. Wheeler, of New York, at New York and Pennsylvania.

By A. McGregor, of New York, at New York and Pennsylvania.

By H. M. Flagler, of New York, at New York and Pennsylvania.

By Geo. F. Gregory, of New York, at New York and Pennsylvania.

By Martin Snyder, of Cleveland, Ohio, at Ohio and Pennsylvania.

By M. J. Kearney, of Cleveland, Ohio, at Ohio and Pennsylvania.

By R. H. Sargent, of Lima, Ohio, at Conneautville, Pennsylvania.

14 By Thomas McLaughlin, of Lima, Ohio, at Pennsylvania.

By W. L. Robinson, of Conneautville, Pennsylvania, at said Conneautville.

By John S. Eldridge, of Conneautville, Pennsylvania, at said Conneautville.

By William Whiting, of Holyoke, Massachusetts, at said Holyoke.

By O. H. Greenleaf, of Holyoke, Massachusetts, at said Holyoke.

Fifth. Defendant further alleges that the said alleged invention and improvement or material and substantial parts of the same described and claimed as new in the said letters patent were, before the assumed or supposed discovery thereof by the complainant, patented by the following letters patent, to wit:

United States Letters Patent.

No. 43433, dated July 5, 1864, and granted to Theodore Schumann and C. G. Frash.

No. 46206, dated February 7, 1865, and granted to John M. Batchelder.

No. 46554, dated February 28, 1865, and granted to Lewis Francis.

No. 46734, dated March 7, 1865, and granted to Jesse G. Thompson.

No. 47825, dated May 23, 1865, and granted to Benoni H. Howell.

No. 109,010, dated November 8, 1870, and granted to William Hornitz.

Sixth. Defendant further alleges that the alleged invention and improvement or material and substantial parts of the same described and claimed as new in the said original and reissued letters patent and attempted to be patented thereby did not at the time of the assumed discovery thereof by the complainant constitute any

15 new and useful art, machine, manufacture, or composition of matter within the meaning of the statutes of the United States relating to the grant of patents for inventions and did not then involve the exercise of the inventive faculty nor constitute patentable invention nor the proper subject of valid letters patent, and that therefore the complainant's said reissued patent was and is invalid and void.

Seventh. Defendant further alleges that the written description of said alleged invention or discovery and of the manner and process of making, constructing, compounding, and using the same is not in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it appertains or with which it is most nearly connected to make, construct, and compound and use the same; and defendant alleges that therefore the said patent is invalid and void.

Eighth. Defendant further alleges that for the purpose of deceiving the public and causing them to believe that the said alleged invention was new the description and specification of the said original and reissued letters patent was made to contain less than the whole truth and did not contain the whole truth relative to said alleged invention or discovery.

Ninth. Defendant denies that it has contrived to injure the complainant or to deprive him of any benefits which might or would accrue to him from the said alleged invention; and defendant denies that since the grant of said letters patent it has in any way infringed the same or any of the rights of the complainant; denies that the defendant has caused or is causing to the complainant great and irreparable loss and injury or any loss or injury whatsoever; denies that by any act or acts of this defendant the complainant has been deprived or is being deprived of great gains and
16 profits or of any gains and profits which he might and otherwise would have obtained; denies that defendant has derived and received or is deriving or receiving in any manner any gains or profits which may or might lawfully belong to the complainant herein.

Tenth. Defendant has no knowledge or information, save as derived from the bill of complaint, as to whether the complainant is the sole owner of the said alleged invention and of said letters patent and of all rights and privileges secured thereby, or whether such rights and privileges are of great value to the complainant. Defendant therefore denies the said allegations and leaves the complainant to make such proof thereof as he is advised.

Eleventh. Defendant has no knowledge or information, save as derived from the bill of complaint, as to whether, upon the issuing of said reissued letters patent, the complainant put the said alleged invention in use. Defendant therefore denies said allegation and leaves the complainant to make such proof thereof as he is advised.

Twelfth. Defendant, while denying that it has in any way infringed the rights of the complainant, alleges that the complainant has not until shortly before the commencement of this suit asserted any claim against this defendant arising from alleged infringements of said letters patent, and defendant alleges on information and belief that the fact long since became known to the complainant that this defendant had been using oil barrels lined with glue, and defendant alleges that if the complainant was the owner of said letters patent and had knowledge and was advised that this defendant was infringing said letters patent it was the duty of said complainant to assert said claim; and defendant alleges that if
17 the complainant had said knowledge and was advised of said infringement the complainant has been guilty of laches, in that thirteen years have elapsed after the grant of said reissued patent and before the complainant asserted any claim thereunder as against this defendant; but this defendant in alleging as above wholly denies that it has in any way infringed any of the rights of the complainant.

Wherefore this defendant, for the reasons hereinbefore recited,

submits that it ought not to be decreed to account to the complainant, nor to pay anything in the nature of profits or damages, nor be enjoined as in the said bill of complaint is prayed; but without admitting that any other matter contained in the said bill of complaint material to be answered unto and not herein already sufficiently answered is true to its knowledge or belief, submits that the complainant is not entitled to any relief whatsoever against this defendant, all of which this defendant is ready to aver, maintain, and prove as this honorable court shall direct, and prays to be hence dismissed with reasonable costs and charges in this behalf most wrongfully sustained.

EVARTS, CHOATE & BEAMAN,
Solicitors for Defendant and of Counsel.

CITY AND COUNTY OF NEW YORK, *ss:*

J. Evarts Tracy, being duly sworn, deposes and says that he is one of the firm of Evarts, Choate & Beaman, solicitors for the defendant in the above-entitled suit; that he has read the foregoing answer and knows the contents thereof and has subscribed the same on behalf of the said defendant, and that the same is true to the best of deponent's knowledge.

That the defendant is a corporation existing under the laws
18 of Ohio, and none of its officers are within the State of New York, to the best of deponent's knowledge, information, and belief, and therefore this verification is made by deponent in its stead.

J. EVARTS TRACY.

Sworn to before me this 3d day of September, 1887.
[SEAL.] ALRICK H. MAN,
Notary Public, City and County of New York.

Order Amending Answer.

At a stated term of the circuit court of the United States for the second circuit and southern district of New York, held at the city of New York on the 22d day of November, 1887.

Present: Hon. E. Henry Lacombe, judge.

EDWARD W. LEGGETT
vs.
STANDARD OIL COMPANY. } In Equity.

On reading and filing the annexed consent of the solicitors for the respective parties, and on motion of Evarts, Choate & Beaman, solicitors for the defendant, it is—

Ordered that the answer of the defendant herein be amended by inserting the names of the following persons who had prior knowledge of and used the alleged invention of the complainant, to wit:

W. W. Green, of Richmond, Crawford county, Pennsylvania, at said Richmond.

19 The firm of Kennedy & Gagan, of Erie, Pennsylvania, at said Erie.

John Carl, of Erie, Pennsylvania, at said Erie.

D. T. Jones, of Erie, Pennsylvania, at said Erie.

Jacob Schall, of Erie, Pennsylvania, at said Erie.

E. HENRY LACOMBE.

Order Amending Answer.

At a stated term of the circuit court of the United States for the second circuit and southern district of New York, held at the city of New York on the 9th day of December, 1887.

Present: Hon. E. Henry Lacombe, judge.

EDWARD W. LEGGETT
vs.
STANDARD OIL COMPANY. } In Equity.

On reading and filing the annexed consent of the solicitors for the respective parties and on motion of the solicitors for defendant, it is ordered—

That the answer of the defendant herein be amended by inserting the name of the following person as one who had knowledge of and used the invention described in the letters patent mentioned in the bill of complaint prior to the invention of Leggett, the patentee thereof, to wit:

Wm. H. Abbott, residing in Titusville, Pennsylvania, at Newton Falls, Ohio, and at said Titusville.

E. HENRY LACOMBE.

20 Circuit Court of the United States, Southern District of New York.

EDWARD W. LEGGETT
vs.
THE STANDARD OIL COMPANY.

The Replication of the Complainant to the Answer of the Respondent.

The repliant, saving and reserving unto himself now and at all times hereafter all and all manner of advantage of exception to the manifold insufficiencies of the said answer, for replication thereunto says that *it* will aver and prove *its* said bill to be true, certain, and sufficient in the law to be answered unto, and that the said answer of the defendants is uncertain, untrue, and insufficient to be replied unto by the repliant; without this, that any other matter or thing whatsoever in the said answer contained material or effectual in the law to be replied unto, confessed and avoided, traversed or de-

nied, is true; all which matters and things the repliant is now and will be ready to aver and prove as this honorable court shall direct, and humbly prays as in and by *its* said bill *it* has already prayed.

Dated New York, Sept. 12, 1887.

EDWIN M. FELT,
Solicitor for Complainant.

EVARTS, CHOATE & BEAMAN,
Defendant's Solicitors.

21 *Order Allowing Amendment of Bill of Complaint.*

At a stated term of the circuit court of the United States for the southern district of New York, held on the 12th day of January, 1888.

Present: Hon. William J. Wallace, judge.

EDWARD W. LEGGETT
vs.
THE STANDARD OIL COMPANY.

The complainant herein having moved for leave to amend his bill of complaint herein, upon reading and filing affidavit of Edwin M. Felt, and notice of said motion, and after hearing counsel for the respective parties—

Ordered that said motion be granted and that complainant may amend his bill of complaint by inserting after the words "and wrongful acts aforesaid," at the 11th folio, the following allegations:

"And your orator further shows that in the month of August, 1873, before the granting of the patent herein set forth, he communicated to the defendant through its president his discovery of a new process for lining the inside of oil barrels with glue which would work a saving of at least ten cents on each pound of glue used and could be used by defendant to great advantage in the lining of its oil barrels; that about three weeks thereafter he made the same statement to other officers of the defendant, at the same time giving them estimates of the probable cost of erecting a plant with which said discovery could be utilized.

22 "That at said last interview said officers requested your orator to disclose to them the nature and particulars of his said invention, which your orator at first declined to do, as he had not then obtained a patent therefor, whereupon the said officers promised and agreed with your orator that if he would so disclose the said invention neither the defendant nor its officers would, under any circumstances, use the said process or any part thereof, either directly or indirectly, without your orator's consent first had and obtained and fully compensating him therefor.

"That relying upon and solely in consequence of the agreement so as aforesaid made, your orator did so disclose to said officers the said invention and gave them full information thereof.

"That shortly thereafter and about January, 1874, the defendant, without the knowledge and consent of your orator, proceeded to use

the process invented by him, so disclosed to its officers and described in said letters patent issued to him, and has continued to so use the same up to the present time.

"That by reason of the aforesaid agreement, so made as aforesaid, your orator will insist and pray to this honorable court that this defendant is in equity estopped from denying or in any way questioning or attacking the validity of your orator's invention and the patent issued to him therefor."

WM. J. WALLACE.

(Endorsed:) Filed January 23, 1888.

23 United States Circuit Court, Southern District of New York.

EDWARD W. LEGGETT, Complainant,
against
THE STANDARD OIL COMPANY, Defendant. } In Equity.

To the honorable the judges of the circuit court of the United States for the southern district of New York:

Edward W. Leggett, a citizen of the United States, residing in the State of New York, brings this his amended bill of complaint against the Standard Oil Company, a corporation duly incorporated, organized, and doing business under and in pursuance of the laws of the State of Ohio.

And thereupon your orator complains and says—

That your orator is a citizen of the United States, residing in the State of New York, and was and is the original and first inventor of a new and useful improvement "in lining oil barrels with
24 glue," fully described in the letters patent hereinafter mentioned, which said improvement was not used by others and has not been patented or described in any printed publication and had not been in public use or on sale for more than two years prior to his application for a patent therefor, hereinafter set forth.

And the respondent, the said Standard Oil Company, is a corporation created by and existing under the laws of the State of Ohio and having a place of business in the city and State of New York and district aforesaid.

And your orator further shows unto your honors that thereafter your orator, so being the first and original inventor of said improvement, did, on the 29th day of September, 1873, apply in due form to the Commissioner of Patents of the United States for letters patent of the United States for such improvement, and, having fully and in all respects complied with all the requirements of the law on that behalf, letters patent therefor were duly issued to your said orator, Edward W. Leggett, by the United States, under the seal of the Patent Office, signed by the Secretary of the Interior and countersigned by the Commissioner of Patents, bearing date the 21st day of October, 1873, and numbered 143,770, whereby there was granted and secured to him, his heirs and assigns, for the term of seventeen

years from the 21st day of October, 1873, the full and exclusive right to make, use, and vend the said invention throughout the United States and the territories thereof, as by reference to a certified copy of said letters patent in court to be produced will more fully and at large appear.

And your orator further shows unto your honors that your orator, Edward W. Leggett, having for good and lawful cause duly surrendered said letters patents to the Commissioner of Patents and having made due application therefor, and having in all
25 things complied with the acts of Congress in such case made and provided, did, on the 10th day of March, 1874, obtain new letters patent, being for the same invention, for the residue of said term of seventeen years from the date of the original patent, to wit, the 21st day of October, 1873, which new letters patent were marked reissue No. 5785, and were issued in due form of law under the seal of the Patent Office of the United States, signed by the acting Secretary of the Interior and countersigned by the Commissioner of Patents, and bearing date the 10th day of March, 1874, as by reference to the last-mentioned reissue of letters patent or a certified copy thereof in court to be produced will more fully and at large appear.

And your orator further shows that by virtue of the premises he is the sole and exclusive owner of said invention and said reissue of letters patent therefor and of all the rights and privileges granted and secured or intended to be granted and secured thereby throughout the United States and the territories thereof, and that the said rights and privileges have been and are of great value to your orator; and thereupon your orator put the said invention into use.

And your orator further shows unto your honors that the defendant herein, well knowing the premises and the rights secured by your orator as aforesaid, but contriving to injure your orator and to deprive him of the benefits which might or otherwise would accrue to him from said invention and without the license, allowance, and against the will of your orator and in violation of your orator's rights, has made and used since said 10th day of March, 1874, in the State of Ohio and elsewhere and still make and use the said improvement and invention described and claimed in said reissue of letters patent, all in violation and defiance of the exclusive right and privileges granted and secured to your orator
26 in or by said letters patent and said reissue of letters patent and in infringement of said letters patent and of said reissue of said letters patent and of the claims therein contained, to your orator's great and irreparable loss and injury, and by which your orator has been and still is being deprived of great gains and profits which he might and otherwise would have obtained.

And your orator further shows to your honors that the said defendant, under its corporate name and otherwise, has derived and received and is still deriving and receiving from the aforesaid wrongful use of said invention large gains and profits, but what amount of such gains and profits has been so derived and received by said defendant your orator does not know and cannot set forth, but prays that said defendant may be required to make a discovery

as to its use under its corporate name and otherwise of said invention or improvement and of the amount of such gains and profits received by it therefrom or by means thereof.

And your orator further shows unto your honors that the said defendant has been warned and requested to desist and refrain from said infringement and said unlawful and wrongful acts, but that said warning and request and notice have been wholly disregarded by said defendant, and that said defendant still continues said infringement and the unlawful and wrongful acts aforesaid.

And your orator further shows that in the month of August, 1873, before the granting of the patent herein set forth to deponent, he communicated to the defendant through its president his discovery of a new process for lining the inside of oil barrels with glue which would work a saving of at least ten cents in each pound of glue used and could be used by defendant to great advantage in the lining of its oil barrels; that about three weeks thereafter he made the same statements to other officials of the defendant, at the same time
27 giving them estimates of the probable cost of erecting a plant with which said discovery could be utilized; that at said last interview said officers requested your orator to disclose to them the nature and particulars of his said invention, which your orator at first declined to do, as he had not then obtained a patent therefor; whereupon the said officers promised and agreed with your orator that if he would so disclose said invention neither the defendant nor its officers would under any circumstances use the said process or any part thereof, either directly or indirectly, without your orator's consent first had and obtained and fully compensating him therefor.

That, relying upon and solely in consequence of the agreement so as aforesaid made, your orator did so disclose to said officers the said invention and gave them full information thereof.

That shortly thereafter and about January, 1874, the defendant, without the knowledge and consent of your orator and in violation of the promise and agreement so as aforesaid made with your orator, proceeded to use the process invented by him so disclosed to its officers and described in said letters patent issued to him and has continued to so use the same up to the present.

That by reason of the aforesaid disclosures and agreement so made as aforesaid your orator will insist and pray to this honorable court that it, this defendant, is in equity estopped from denying or in any way questioning or attacking the validity of your orator's invention and patent issued to him therefor.

In consideration whereof, and forasmuch as your orator can have no adequate relief except in this honorable court, to the end, therefore, that the said defendant, The Standard Oil Company, may, if it can, show cause why your orator should not have the relief thereby prayed, and may, on its corporate oath and according to the
28 best and utmost of its several and respective knowledge, remembrance, information, and belief, full, true, direct, and perfect answers make to the premises and to all the several matters hereinbefore stated and charged as fully and particularly at if severally and separately interrogated as to each and every of said mat-

ters, and that said defendant may be required to make discovery and disclosure of all gains and profits derived and received from such wrongful and unlawful manufacture and use as aforesaid, and that it may be decreed to account for and with and pay over to your orator the profits by it acquired and the damages suffered by your orator from the unlawful and wrongful acts.

And may it please your honors, the premises considered, to grant unto your orator the writ of injunction issuing out of and under the seal of this honorable court perpetually enjoining and restraining the defendant, The Standard Oil Company, its officers, agents, servants, workmen, employés, and attorneys, each and every of them, from directly or indirectly making, constructing, using, vending, delivering, working, or putting into practice, operation, or use or in anywise counterfeiting or imitating said invention patented as aforesaid, and that your orator may have such further and other relief or order in the premises as shall be just, equitable, and proper and the nature of the case may require; and may it please your honor to grant unto your orator a provisional and preliminary injunction issuing out of and under the seal of this court enjoining and restraining the defendant, its officers, agents, servants, workmen, employés, and attorneys and each and every of them to the same purport, manner, and effect as hereinbefore prayed for in regard to said perpetual injunction.

29 · And may it please your honors, the premises considered, to grant unto your orator the writ of subpœna issued out of and under the seal of this honorable court, to be directed to the above-named defendant, The Standard Oil Company, thereby commanding said company, at a certain day and under a certain penalty therein to be limited, personally to be and appear before your honors in this honorable court and then and there full, true, and perfect answers make to all and singular the premises, and, further, to stand to, perform, and abide such further order, direction, and decree therein as to your honors shall seem meet.

And your orator will ever pray, etc.

EDWARD W. LEGGETT.

EDWIN M. FELT,
Solicitor for Complainant.
SAMUEL C. REED, *Of Counsel.*

UNITED STATES OF AMERICA, }
Southern District of New York. }

Edward W. Leggett, being duly sworn, says that he is the complainant herein; that he has read the foregoing amended complaint and knows the contents thereof; that the same is true of his own knowledge except as to the matters therein stated to be alleged on information and belief, and as to those matters he believes it to be true.

EDWARD W. LEGGETT.

Sworn to before me this 13th day of January, 1888.

E. D. PAXSON,
[L. S.] *Notary Public* (96), *N. Y. Co.*

(Endorsed:) U. S. circuit court, so. dist. of N. Y. Edward W. Leggett *vs.* The Standard Oil Co. Amended bill of complaint. Edwin M. Felt, comp't's sol'r, 74 Broadway. U. S. circuit court. Filed Jan'y 14, 1888. Timothy Griffith, clerk.

30 *Supplemental Answer.*

Circuit Court of the United States for the Southern District of New York. In Equity.

EDWARD W. LEGGETT
v.
STANDARD OIL COMPANY.

The answer of The Standard Oil Company, defendant, to the amendment introduced in the bill of complaint of Edward W. Leggett, complainant.

This defendant, now and at all times reserving any and all benefit of exception that may be had or taken to the errors and imperfections contained in the amendment introduced in the bill of complaint, for answer thereto, or to so much thereof as this defendant is advised is material or necessary to be answered, says:

First. This defendant denies that in the month of August, 1873, the complainant communicated to the defendant through its president the complainant's discovery of an alleged new process for lining the inside of oil barrels with glue; denies that the complainant thereafter made the same statement to other officers of this defendant and gave to said officers estimates of the probable cost of erecting a plant with which said discovery could be utilized; denies that the said other officers of defendant requested the complainant to disclose to them the nature and particulars of his alleged invention or that the complainant declined to disclose the same; denies
31 that this defendant or said officers made any promise to or agreement with the complainant in respect to the said alleged invention, and especially denies that the said officers of the defendant promised and agreed with the complainant that if the complainant would disclose to them his said alleged invention neither the defendant nor its officers would, under any circumstances, use the said alleged invention or any part thereof, directly or indirectly, without the consent of complainant first had and obtained and without fully compensating the complainant for such use; denies that, relying upon the said alleged promises or upon any promise or representations of defendant, the complainant disclosed to said officers of defendant the alleged invention of complainant and gave full information thereof to said officers; denies that the complainant disclosed to said officers of defendant any new and useful invention of said complainant; denies that, in violation of any promise and agreement made to and with the complainant, the defendant proceeded to use and continued to use the alleged invention of

complainant, and denies that defendant has violated or infringed any of complainant's rights in the premises.

Second. Defendant, further answering and as a further defense, says that if the said alleged promise or any promise, agreement, or contract was made by this defendant or its officers to or with the complainant touching the said alleged invention or discovery (which this defendant denies) such promise, agreement, or contract was made more than six years before the filing of the bill of complaint herein, and if the complainant ever had any cause of action or suit against this defendant arising from said alleged promise, contract, or agreement concerning the said alleged invention or discovery such cause of action or suit did not accrue within six
32 years before the bill of complaint was filed herein, nor did this defendant at any time within six years before the filing of the said bill of complaint promise, contract, or agree with the complainant as alleged in said amendment to the bill of complaint, and as from said amendment it appears that the promise alleged was made in the year 1873 this defendant prays the benefit of this defense in bar of the allegations of said amendment with same effect as if this defense had been formally pleaded by this defendant.

Third. Defendant, further answering and as a separate defense, sets forth the statute of frauds as enacted by the laws of the State where (so far as defendant is informed by the allegations of the said amended bill) the said promise, contract, or agreement is alleged to have been made, to wit, the State of Ohio, and says that neither this defendant nor any other person thereunto by this defendant lawfully authorized did ever make or sign any memorandum or note of any such contract, agreement, or promise as is alleged by complainant touching the said alleged invention or discovery, and this defendant insists upon the said statute as if the same were pleaded by this defendant and upon a similar statute in any other State where the complainant may claim that the said contract was made.

Fourth. This defendant, denying that the complainant is entitled to any discovery or relief whatever against this defendant, insists that this defendant, in this suit for alleged infringement of complainant's letters patent, is not estopped to deny, question, and attack the validity of said letters patent and of the complainant's alleged invention; and defendant alleges that in complainant's said amendment to the bill of complaint herein nothing is set forth which, even if true, would estop this defendant from denying
33 the validity of said invention and said letters patent; and this defendant prays the same advantage as if it had pleaded or demurred to the said amendment, and now prays to be hence dismissed with its reasonable costs and charges in this behalf most wrongfully sustained.

EVARTS, CHOATE & BEAMAN,
Solicitors for Defendant and of Counsel.

STATE OF NEW YORK, }
City and County of New York, } *ss:*

John D. Rockefeller, being duly sworn, says that he is the president of The Standard Oil Company, the corporation named as defendant in the above answer; that he has read the same and knows the contents thereof, and that the same is true to the best of his knowledge and belief.

JOHN D. ROCKEFELLER.

Sworn to before me this 6th day of Feb., 1888.

MARTIN JUDGE,
[SEAL.] *Notary Public, Kings County.*

Certificate filed in New York Co.

33*a* Circuit Court of the United States, Southern District of New York.

EDWARD W. LEGGETT
vs.
THE STANDARD OIL COMPANY.

The Replication of the Complainant to the Amended Answer of the Defendant.

This repliant, saving and reserving unto himself now and at all times hereafter all and all manner of benefit and advantage and exception which may be had or taken to the manifold insufficiencies of the said amended answer, for replication thereunto says that he will aver, maintain, and prove his said amended bill of complaint to be true, certain, and sufficient in law to be answered unto, and that the said amended answer of the defendant is uncertain, untrue, and insufficient to be replied unto by this repliant; without this, that any other matter or thing whatsoever in the said amended answer contained material or effectual in the law to be replied unto and not herein and hereby well and sufficiently replied unto, confessed or avoided, traversed or denied, is true; all which matters and things this repliant is and will be ready to aver, maintain, and prove as this honorable court shall direct, and humbly
33*b* prays as in and by his said bill he has already prayed.

New York, February 8, 1888.

EDWIN M. FELT,
Complainant's Solicitor.

(Endorsed:) U. S. circuit ct., so. dist. of N. Y. Edward W. Leggett *vs.* Standard Oil Co. Replication to amended answer. Edwin M. Felt, compl't's sol. U. S. circuit court. Filed Feb. 14, 1888. Timothy Griffith, clerk.

34 United States Circuit Court, Southern District of New York.

EDWARD W. LEGGETT
vs.
THE STANDARD OIL COMPANY. } In Equity. No. 4117.

Testimony taken on the part of the complainant, under and pursuant to the 67th rule of the Supreme Court of the United States, as amended, before John A. Shields, Esq., a standing examiner of said court, as per notice attached.

NEW YORK, *September 14th*, 1887.

Present: Edwin M. Felt, Esq., of counsel for compl'nt; C. C. Beaman, Esq., of counsel for defendant.

Complainant's counsel offers in evidence reissued patent of the United States No. 5785, dated March 10, 1874, to Edward W. Leggett, the complainant, and the same is marked Complainant's Exhibit Leggett Reissue, September 14, 1887, J. A. S., ex.

Complainant's counsel also offers in evidence deposition of William Plumer, taken pursuant to notice in this suit August 31st, 1887, and the same is marked Complainant's Exhibit Plumer Deposition, September 14th, 1887, J. A. S., ex.

35 COMPLAINANT'S EXHIBIT PLUMER DEPOSITION. Sept. 14, 1887. J. A. S., Ex'r.

Circuit Court of the United States, Southern District of New York.

EDWARD W. LEGGETT
versus
THE STANDARD OIL COMPANY. } In Equity.

Evidence for Complain-t.

Taken pursuant to the 67th rule of the Supreme Court of the United States, in equity, as amended, before me, J. Henry Taylor, examiner U. S. circuit court for Mass. dist.

LEXINGTON, MASS., *Aug.* 31, 1887—11 o'clock a. m.

Met pursuant to annexed notice.

Present: Edwin M. Felt, Esq., of counsel for compl'nt; C. C. Beaman, Esq., of counsel for defendant.

Deposition of William Plumer.

Direct examination by EDWIN M. FELT, Esq., of counsel for complainant:

Int. 1. Please state your name, age, residence, and occupation.

A. William Plumer; 63; Lexington, Mass.; at present am doing nothing; have been a civil engineer; have been sick about six weeks; have been engaged in the manufacture of glue from six to eight years;

first commenced my interest in glue in Woburn some time in 1867, I think; was there several years and then went to Gloucester
36 and started a glue factory there with other gentlemen, having sold out at Woburn. I think I left Gloucester as late as 1875; haven't been in the glue business since.

Int. 2. Were you ever in the employ of the Standard Oil Company? If so, during what period?

A. I was. The first of January, 1874, I went to Cleveland, Ohio, at the request of the Standard Oil Company. I there met Mr. Flagler, of said company, and on January 8, 1874, visited with him the works of the company and was introduced by him to Mr. Samuel Andrews, who, I was informed, had charge of the manufacturing department. In company with Mr. Andrews and Mr. Flagler, I went or visited the gluing-room, and was shown the whole process of gluing barrels, and after the barrels were glued the heads of several were taken out and I was shown the interior of the barrels. Afterwards I went into their employ, some time in January, 1874, and continued in their employ till some time in the fall. My duties were purchasing stock and making liquid glue. I superintended the building of the factory and made liquid glue for them while I was there; which glue was used exclusively for gluing the insides of oil barrels.

Int. 3. State how you manufactured the glue and how they glued the barrels.

A. The stock consisting of pieces of hides—cuttings. To American stock, Buffalo stock, and green-hide pieces, I purchasing only the best stock obtainable in the market. This stock was first thoroughly washed by machines I had made for the purpose; then put in pits and limed. After being turned over several times and properly limed, so as to remove any fatty substances there might be, it was taken out and again washed to remove the lime and any impurities, then tested by litmus paper to see if it contained any alkali, and, if it did, rewashed until there was no trace left of the alkali;
37 then it was conveyed into glue tubs constructed as follows: large wooden tubs with a large steam coil and a second steam coil for the introduction of free steam. This was Peter Cooper's pattern of a glue tub and was the same pattern I had used at Woburn and Gloucester. Steam was then let into the close steam coil and the stock boiled, the stock at the time being wet just as it comes from the washer and no extra water needing to be added. The stock was boiled until melted. This melting produced a liquid glue as I call it. After the stock was melted and after I had tested it and thought it of the proper consistency it was drawn off through strainers into a receiving tank. Free steam was then admitted into the tub where the residuum was left and there was a second boiling. This was run into the same receiving tub, mixing the two together. This usually completed the process, and what was left we called pudding and threw away as useless. We boiled generally from four to five hours. The two boilings took about half a day or a little more. In the bottom of the receiving tub was also a steam coil to keep the glue in as warm and thin a state as possible. I can't give the exact temperatures of the glue in the tubs. We avoided

high temperatures, as it injures glue, but it was never above boiling point in the boiling tub, because the top was always open and never over 125 degrees in the receiving tub. When we drew it from the boiling tub it would be at the boiling point. The average temperature in the boiling tub would be 212 degrees and the average temperature in the receiving tub not over 125 degrees and often less, my object being simply to keep it warm and in its liquid state, preventing it from jellying. The receiving tub had attached to it a steam pump which forced the liquid glue through a pipe which extended the whole length of the gluing-room, in which there were series of steam-jacketed kettles to receive the glue, there being a connecting pipe over each kettle, with valves attached, so you could fill
38 any or all of said kettles from the receiving tub. From those jacketed kettles the barrels were glued. The glue was kept in a liquid state very little less than boiling, 180 degrees to 200 degrees. There was an object in keeping the glue as hot as possible without injuring the glue. A barrel was placed near the jacket kettle, a large measure of the glue was taken out and poured into the barrel through a funnel placed in the bung-hole. This measure was of a capacity of one or two gallons. The barrel was then bunged up. The barrel then rolled over and over, headed up on each end. In case there was any imperfections in the barrel the hot glue would steam out of those holes, and the cooper would bore a hole where the place was and drive in a wooden plug. The barrel was then subjected to a second rolling and shaken and if no other imperfections were found the bung was removed and the excess of liquid glue allowed to run out. The barrel was then run up upon some skids or a frame-work where it was set with the bung down, so that any remaining glue which hadn't stuck would run out, and there was a receptacle to catch and save it, and that finished the process.

Int. 4. Were the materials which you used as stock to make the glue such as were commonly used by glue manufacturers?

A. Yes; only we bought the best stock, so as to get the best percentages of jelly, the best there was.

Int. 5. Was the process of manufacture of liquid glue the usual process employed by glue manufacturers?

A. Yes; with the exception that we had the liquid glue thinner than we would if making dried glue.

Int. 6. What did the defendants put into the barrels after they were so lined, if you know?

A. Coal oil, or kerosene, as we call it here.

39 Int. 7. Was the manufacture in practice which you have testified to the one used continuously at Cleveland while you were so employed?

A. Yes.

Int. 8. Of what material were the barrels made which were coated?

A. Wooden barrels.

Int. 9. You have spoken about the consistency of the liquid glue. Was the consistency of the liquid glue when poured into the barrels

greater or less than you would have made it had you continued the manufacture into solid glues?

A. As I have already stated, it was less, because in using the stock that we used all that was required in gluing barrels was to have a firm jelly, and the thinner the glue was I considered it would better enter the pores of the barrel and render the barrel oil-tight. That was my notion of it, and before I began I had a lot of kegs made and tested them with different consistencies, and found that consistency, in my judgment, to be the best.

Int. 10. You have spoken about the glue penetrating the pores of the wood; what caused it to so penetrate, if you know?

A. Because any hot liquid poured into a dry wooden vessel will be absorbed into the wood more or less. Perhaps I ought to say that when the barrel was placed on the skids the glue cooled and formed a jelly coating over the interior of the whole barrel.

Int. 11. Did this coating make a satisfactory coating for the barrels while you worked for the defendant?

A. I so understood it.

Cross-examined by C. C. BEAMAN, Esq., of counsel for defendant:

A. We glued from four to six thousand barrels a day; the only difference I used at Woburn and Gloucester was that I made
40 it thinner at Cleveland. At Woburn and Gloucester we reduced it down to heavy jelly and cut it and dried it on nets or by artificial means so as to make the ordinary sheet glue of commerce. If we wanted to make the ordinary glue we should have boiled it an hour or two longer, depending on the stock used. Such stock as we used at Cleveland we would have to boil it from one to two or three hours longer to make commercial glue—that is, to give it the right consistency for sale. We could have made sheet glue from the glue we made at Cleveland, but not profitably. Glue-makers wouldn't have done it, but would have boiled the glue more, so that it would make a thicker jelly when cooled and so that the slices wouldn't fall through the nets when placed thereon to dry. The usual process of making glue is to let the liquid glue run into coolers, and when it hardens it is cut into slices by machinery and dried, and that is the usual dried glue of commerce. The Standard Oil Company never made their glue until I went there, and I made them just as good glue as I could by the best processes and machinery. I took samples from each boiling, jellied it, cut it into slices and dried and marked each slice with the date of boiling and afterwards tested it by the usual process to see that it was properly made and was first-quality glue. I had several samples of every boiling and of all the glue that went into the barrels.

Int. 12. Describe the process the Standard Oil Company were using for gluing barrels when you went there in 1874.

A. They bought dried glue in the market—good glue—a good deal of Peter Cooper's glue; I knew it was good as soon as I saw it; they soaked it in water, put it into iron kettles with steam coils in

them and boiled it; kept it boiling, too, and used this glue
41 to glue their barrels; they boiled it to the proper consistency and glued their barrels just as I have described. The process of gluing was not changed at all; the change was in using the liquid instead of the commercial glue and using the jacketed kettles; I told them they were spoiling the glue by excessive boiling, and I recommended the use of jacketed kettles, which were immediately put in. The jacketed kettles would be an improvement with the dried glue as well as the liquid glue, and kept the glue from getting too hot. I understood they were doing the same number of barrels before I got there, increasing all the time; so far as I know they never sold any of the glue I made for them, but when I went there it was expected I would make more glue than was necessary, which was to be sold and I was to get a percentage of the profits. During the night we let the temperature run down, but not enough to jelly, but not below 90 degrees, but once or twice it did jelly on top, when we warmed it up before pumping. I have taken out quite a number of patents myself, one or two on glue-drying, before 1874. We built the factory right away and didn't get to gluing barrels before May or later. I know Edward W. Leggett; I saw him in Boston first long after I returned from the Standard Oil Company; several years after.

Int. 13. When did you know he had taken out any patent on lining oil barrels with glue?

A. The first time I visited the factory with Mr. Flagler, January 8, 1874. I was told either by Mr. Flagler or Mr. Andrews that one Leggett had a patent for making liquid glue and was asked if I thought my process would interfere with it; I answered that I had never seen the patent, knew nothing about or heard of it before, and could form no judgment; only knew I could make liquid glue; that's all I professed to know. By liquid glue I mean that
42 glue that had never been dried; that would do for gluing barrels from the process as I knew it. I understand that glue that has never been dried contains what I call the water of glue, and that every time it is melted it deteriorates, and if it is never dried it is a better article. The books also state, and I knew it from my studies.

Int. 14. Who first suggested to the Standard Oil Company making their own glue?

A. I understood this Mr. Leggett did.

Int. 15. Did you ever suggest it to them?

A. I did; I told them they could make glue better and cheaper, and that the largest expense was incurred in drying it and the most precarious part of the business, and I explained to them why it was better and cheaper and that by buying good stock they would be always certain to get good glue; they didn't put into their barrels anything but glue, to my knowledge, and I was down in the gluing-room almost every day.

Int. 16. When did you first see a copy of Leggett's patent?

A. I think I saw it first in New York when I made an affidavit

for Mr. Felt about this matter some months ago; the patent was shown me after I made my affidavit.

Int. 17. How long did you keep the glue in these receiving tubs before using?

A. It very seldom remained over night; it was kept as short a time as possible; we used live steam in the boiling tub to make additional water after we had drawn off the first drawing; we judged whether the melting was done by drawing off a little and testing it with my fingers; when I had any doubt about it I would jelly it.

Int. 18. Will you look at the letter I now show you and say if it is a letter written by you to Mr. Flagler under date of November 19, 1873?

A. It is; it is a letter I wrote him at the time; I recognize it at once.

43 (The letter is put in evidence for defendant, and the same is marked "Defendant's Exhibit A, J. H. T., examiner.")

The patented process I refer to in the letter is for making dried glue—for drying glue artificially. I didn't use any of my patented processes at Cleveland. I only made a liquid glue there, as I have described. I never made any of the elastic glue at Cleveland to be used by the Standard Oil Company.

WILLIAM PLUMER.

Subscribed and sworn to before me this 31st day of August, 1887.
[SEAL.] J. HENRY TAYLOR, *Examiner.*

UNITED STATES OF AMERICA, }
District of Massachusetts. }

I, J. Henry Taylor, an examiner appointed by the circuit court of the United States of America in and for the district of Massachusetts, first circuit, and duly qualified, do hereby certify that the foregoing are proofs for final hearing taken before me in the cause in the caption named on the part of the complainant; that on the day named in the foregoing evidence there attended before me, at Lexington, in said district of Massachusetts, the counsel for the respective parties in said cause and the witness, to wit, William Plumer; that said witness, being of sound mind and lawful age, was by me first duly cautioned and sworn to testify the truth, the whole truth, and nothing but the truth in said cause, and was then carefully examined, and the said witness did thereupon depose as appears in the foregoing deposition, which deposition was re-
44 duced to writing in the presence of the said witness, and when completed was read over to the said witness and signed by him as and for his deposition in my presence.

I further certify that I am not attorney nor of counsel for either of the parties in said cause nor in any way interested in the event thereof.

I further certify that in the taking of said evidence I have complied in all respects with the requirements of the 67th rule in

equity, as amended, of the Supreme Court of the United States, and I herewith transmit said evidence under my seal to the clerk of the court in which said cause is pending.

In testimony whereof I have hereunto set my hand and seal this 31st day of August, A. D. 1887.

[SEAL.]

J. HENRY TAYLOR,
Examiner U. S. Circuit Court, District of Massachusetts, and Notary Public.

Examiner's fees, $20.

Circuit Court of the United States, Southern District of New York.

EDWARD W. LEGGETT
vs.
THE STANDARD OIL COMPANY.

Take notice that I shall proceed to take proofs for final hearing on the part of the complainant under the 67th rule of the
45 Supreme Court for courts in equity, as amended, or in accordance with the statute in such case made and provided and in pursuance of the rules and practice of the court before an examiner of the court or other proper officer under said statutes and rules, at the residence of William Plumer, in the town of Lexington, State of Massachusetts, on the 31st day of August, 1887, at eleven o'clock in the forenoon.

You are invited to attend and cross-examine the witness produced.

Dated New York, August 22, 1887.

EDWIN M. FELT,
Complainant's Solicitor.

Evarts, Beaman & Choate, defendant's solicitors.

Name of witness, William Plumer, Lexington, Mass.

Complainant rests.

Defendant gives notice of a motion to dismiss for failure of proof.

Adjourned subject to new notice.

46 Circuit Court of the United States, Southern District of New York.

EDWARD W. LEGGETT
vs.
THE STANDARD OIL COMPANY.

Testimony of witnesses taken in behalf of complainants, pursuant to annexed notice, before John Shields, United States commissioner, February 14, 1888, at eleven o'clock a m.

Present: C. C. Beaman, Esq., for respondent; Edwin M. Felt, Esq., for complainant, and Samuel C. Reed.

EDWARD W. LEGGETT, the complainant, being duly sworn and examined, testified as follows:

Q. 1. What is your name, age, residence, and occupation?

A. Edward W. Leggett; aged 46 years; reside at 24 West 39th street, New York city; am by occupation a glue manufacturer.

Q. 2. State what experience you have had in the manufacture of glue.

A. I have been in the glue business almost all my life; my father commenced the glue business in about 1855, and I heard glue talked over, the manufacture, etc., from that time to the present. I went with my father in the glue business in about 1858; I commenced testing glue for strength and quality; I constantly sought all the information I could about the manufacture of glue, and visited what glue manufactories I could find and talked with glue manufactures also; read all the articles I could find on the subject of
47 glue. In 1865 I commenced traveling and selling glue for F. W. & G. F. Leggett. F. W. & G. F. Leggett were my uncles. I traveled for them through New York State, Illinois, and other parts of the country, selling glue and buying glue. During this time I was testing glue, and I also visted different refineries for the purpose of selling them glue, saw the manner in which they glued their barrels, learned the different qualities of the glue they bought, and sold them what I could.

Q. 3. Please state as near as you can the date when you first commenced the manufacture of glue yourself.

A. I commenced experimentally in manufacturing glue in a small way in 1868; as a manufacturer in Pittsburg in 1874.

Q. 4. And have you continued as a glue manufacturer since 1874 to the present time? And, if not, state at what intervals you were not such manufacturer.

A. I think for about six months in 1875 I was not at that time; I changed my business; with that exception I have been continuously a manufacturer of glue since that time to the present.

Q. 5. During the period which you have been engaged in and interested in the glue business what attention have you given, if any, to use of glue as a lining for the inside of barrels or other receptacles, and what experiments have you made in that direction, giving the dates and details of such experiments as you may remember?

A. I commenced experimenting, as I said before, about 1868 by having a little—one thing I used to carry about me—a little alcohol lamp with a little double-jacket kettle on top of it. I would use this lamp to test glue with and experiment in testing hide pieces—hide scraps. During these experiments of different kinds I made up my mind that it was a very foolish idea to buy dried glue and remelt it and put it into barrels. I said nothing about this, but kept
48 working it over in my mind and experimenting upon it; talked with glue manufacturers whether it was necessary to dry glue, and they generaliy considered that it was necessary; they had an idea that the drying process gave the glue a different quality. I experimented upon this by taking the dried glue and

taking the similar glue which I made. I would glue blocks of wood together with it, and I found that the liquid glue that had never been dried was fully equal and, in my opinion, better than the dried glue. It made a stronger joint—stronger test. I tested these blocks under water to see how long they would hold in that way, and I found that the liquid glue was the stronger and would last longer.

Q. 6. Than melted glue?

A. Than melted glue, than dried glue. I also found that the liquid glue had a softer, as you might say—a more penetrating character to it; more limpid, as it were; that the water blended more with it; therefore I believed it to be more penetrating in the barrels; filled up the pores better.

Q. 7. Where is your present place of business?

A. At Elizabethport, New Jersey.

Q. 8. When did you commence your manufacturing at Elizabethport?

A. At Elizabethport about 1877.

Q. 9. How extensively have you been engaged in the glue manufacture since?

A. Well, we manufacture now about ninety to ninety-five thousand pounds of glue a month.

Q. 10. Have you made any inventions in relation to the manufacture and use of glue? And, if so, state generally what they have been and about when you made them.

A. I invented a drying machine; also invented——

Q. 11. What year?

A. I think about '78.

Q. 12. Did you take a patent for it?

A. Yes; took a patent for it. I also invented a part of a glue-spreader.

49 By Mr. BEAMAN:

Q. 13. What year was that?

A. I think that was about the same year.

Q. 14. About the same year you took a patent for that?

A. Took a patent for that; yes, sir.

By Mr. FELT:

Q. 15. Have you sold glue to the defendant; and, if so, when first?

A. I have. I sold them glue, I think, in '73 and different periods back of there.

Q. 16. Have you in former years sold glue to any of the gentlemen who are now interested in the defendant company?

A. I have; yes, sir.

Q. 17. And, if so, to whom, and about what time?

A. I used to sell Mr. Flagler and Mr. Rockefeller. I usually saw them there.

By Mr. BEAMAN:

Q. 18. At Cleveland, I suppose?
A. Yes; at Cleveland.
Q. 19. In '73?
A. Back as far, I think, as '70. I cannot exactly say just how long ago my acquaintance did begin with them.

By Mr. FELT:

Q. 20. Prior to the date of your patent in this suit were you personally acquainted with any of the officers of defendant? If so, give their names and when you first met them.
A. Yes, sir; I was acquainted with Mr. Rockefeller, president.

By Mr. BEAMAN:

Q. 21. What Rockefeller?
A. John D. Rockefeller. H. M. Flagler—I think he was then treasurer—and O. H. Payne and Samuel Andrews, superintendent.

By Mr. FELT:

Q. 22. All doing business at Cleveland?
A. All doing business at Cleveland. Yes, sir: I first met them at Cleveland.
Q. 23. What year?
A. It would be hard to say what year.

50 By Mr. BEAMAN:

Q. 24. Before '73?
A. Four or five years before '73. I knew Mr. Flagler and Mr. Rockefeller the longest.

By Mr. FELT:

Q. 25. State whether in 1873 you had any conversation with Mr. Rockefeller—John D. Rockefeller—on the subject of gluing the inside of oil barrels; and, if so, where and when it took place.
A. Yes, sir; I met Mr. John D. Rockefeller about the first of August, 1873, on the train at Saratoga, and went with him on that train as far as Schenectady. Mr. Rockefeller came over to me——
Q. 26. Wait a minute. I will ask you that in a separate question. Now please state the details of that conversation, giving just what Mr. Rockefeller said to you and what you said.
A. Mr. Rockefeller came to me and said to me that he would like to have me travel for him—that is, for the Standard Oil Company. I told him I didn't desire to travel any longer for anybody and was satisfied with the position I then had.
Q. 27. State just what that position was.
A. I was a traveling salesman and had an interest in the house.
Q. 28. What house?
A. F. W. and G. F. Leggett. I then told him that I would like

to manufacture glue for him; that I had a process that I knew would make him a very great saving; that I believed would make a saving of one-half. He became interested in it and told me that if I had such a process he would be very glad to have me come when I came to Cleveland and lay the matter before them, giving them an estimate of how much it would cost to manufacture the glue and how much the plant would cost. He asked me about what time I would be in Cleveland. I told him I thought
51 about the first of September, and he told me to come and see him, as before stated. That was all that conversation with him.

Q. 29. Was anything said at that conversation as to what this glue was to be used for?

Objected to as leading, especially in view of the witness's last answer that he had stated all that took place at that conversation.

Q. 30. Answer the question.

A. Answer the question?

Q. 31. Oh, yes.

A. Well, it was understood it was oil barrels.

Q. 32. Why do you say it was understood that it was oil barrels?

Same objection.

A. They were using glue for that purpose, and they would not want to manufacture glue for any other.

Q. 33. Did you subsequently call upon them in Cleveland; and, if so, when?

A. I did; yes, sir. I called to see them about the first of September, 1873; I went to them.

Q. 34. Went to them where?

A. At Cleveland, in their office at Cleveland.

Q. 35. And whom did you see?

A. I saw Mr. Rockefeller and Mr. Flagler.

Q. 36. At the office of the defendant?

A. The Standard Oil Company; yes, sir. I gave them an estimate.

Q. 37. Wait a moment. I have not asked you that yet. Was anybody else present or in hearing of that conversation?

A. Not that I remember, except Mr. Flagler and Mr. Rockefeller; not that I remember.

Q. 38. Now state that conversation as nearly in detail as you can remember.

A. I simply at that time laid the plans that I proposed.

Q. 39. I want to know in general.

52 Mr. BEAMAN: Please do not interrupt him; let him go ahead.

Q. 40. Go on.

A. I laid the plans and the cost of manufacture before them and they told me that they would consider the matter—Mr. Rockefeller said this by the way—that they would consider the matter and

wanted to know when I would next be in Cleveland. I told them I thought in about two weeks. They told me they would consider the matter and when I returned to call and see them again.

Q. 41. You say you laid the plans, etc., before them. Please state what you said to them as to what the plans were.

A. Well, I meant by that——

Q. 42. And what they said to you. We want to get the conversation between you as near as you can remember.

A. Well, there was so little conversation after I had given them the cost of putting up the plant, what that amounted to, and the cost of manufacturing the glue, they simply told me they would consider the matter and to come and see them again, as I stated.

Q. 43. When did you have the next interview with any of these gentlemen, and where and with whom?

A. At their office in Cleveland about the middle of September, 1873.

Q. 44. And who was present?

A. Mr. John D. Rockefeller, Mr. Flagler, and O. H. Payne.

Q. 45. Now give the details of that conversation.

A. I went into their private office and Mr. Rockefeller told me that they had considered my proposition and said that it looked very flattering, and further said that I had known them for some time and had done business with them and they wanted to know how I proposed to make such a saving with such a small outlay of money. I told him, or them rather, that that was my secret. It was my capital, and that I did not think it was fair for me to
53 tell them until they had made some positive agreement with me. Mr. Rockefeller then became rather indignant and says, "Mr. Legget, if you cannot trust us we cannot trust you." I then said that I had always known them as gentlemen and honorable gentlemen, and if they would give me their word of honor that they would not use this process—their word of honor and promise that they would not use this process—in any manner, shape, or form without my consent I would impart this process to them. They then said—Mr. Rockefeller did—that they would promise not to use it in any manner, shape, or form without my consent, and I told them then what the process was.

Q. 46. Please state as much in detail as you can what process you disclosed to them at that time.

A. I told them that I proposed to manufacture glue by any of the usual processes of manufacturing glue; that I proposed to buy the stock in its raw state and treat it as any glue manufacturer would; that I proposed to take that stock after treatment and put it in the boilers and boil it down to the proper consistency for the barrels, and dispense entirely with all the drying-rooms a glue factory would have to have, thus making a great saving on the drying of the glue, run no risks in spoiling by the weather, and I deemed it better. After I had told them this they doubted very much that such glue could be used. They thought the glue must be dried or it would not answer the purposes. I assured them that it would, and they considered the matter further and wanted to know when I would

next be in Cleveland. I told them I thought in about a month. They then asked me to call and see them again.

Q. 47. At that conversation what, if anything, was said by you to them in reference to the stage of the manufacture of the glue at which you would use it for the lining of their oil barrels?

Objected to as leading.

54 A. Well, I don't think I mentioned the particular stage; sufficient thickness for their purpose, that would be the only thing that was mentioned, to be manufactured to that point so that it would be suitable for the purpose.

Q. 48. Did you tell them that you did not propose in your process to take dried glue and melt it down?

Same objection.

A. I told them that I did not propose to use dried glue.

Q. 49. Did you tell them that you proposed to use glue to glue the barrels before it had become dried glue?

Same objection. Particularly objectionable as by this witness the counsel in seeking to prove a verbal agreement, in which case the witness should state his own memory and not be influenced by suggestions of counsel.

A. I did tell them that.

Q. 50. You have spoken of the saving that you told them it would make in it. Please state if you told them what that saving would be.

Same objection.

A. I did.

Q. 51. What did you tell them about that saving?

A. I told them they could make their glue for 12 cents per pound, in my opinion, equal to dried glue they paid 22 cents a pound for then.

Q. 52. When was the next conversation you had with them?

A. The next conversation I had with them was about the first of October—the first or middle of October; I think the middle of October.

Q. 53. Where was that and who was present?

A. That was at their office in Cleveland, and Mr. Flagler was present. Mr. Flagler told me they had not considered that
55 matter yet, and when I came back from the west to call and see them again. I got as far as Toledo and there I learned——

Q. 54. Wait a moment.

A. Do you want me to go on, Mr. Felt?

Q. 55. No, I will ask you a question. When did you next call upon them?

A. When did I next call upon them after that?

Q. 56. Yes.

A. I think about a week after the period I have just now spoken of. I think just about a week—a few days afterwards.

Q. 57. Who was present?

A. Mr. Flagler.

Q. 58. What occurred?

A. I told him that the house I was traveling for, or my house rather, F. W. & G. F. Leggett, had, to my surprise, failed; that I was now out of employment and would be glad to take a situation with them. Mr. Flagler asked me how much I wanted as salary and I told him I would travel until we decided about the glue business for $1,500 a year and expenses, which he immediately accepted.

Q. 59. Then you went into their employment?

A. I went into their employment; yes, sir.

Q. 60. How long did you continue in their employment?

A. I continued in their employment until about—well, I think I was in their employment until after January.

Q. 61. January, '74?

A. January, '74, the first of January, 1874, but I went away on a vacation on the 20th of December and when I came back——

Q. 62. When? Give the date.

A. About the first of January, Mr. Payne, I think, told me that they had no further use for my services and my pay was discontinued about December 20th.

Q. 63. About that time did you have any conversation about this glue process that you have testified about?

A. Yes, sir.

Q. 64. With whom?

A. With Col. Payne. I made them a proposition.

56 Q. 65. State what that proposition was.

A. I made them a proposition to manufacture glue for them.

Q. 66. What was said, what did you tell them?

A. What did I tell them?

Q. 67. What did you tell them and what did they say to you—that is what I want to get at?

A. I told Mr. Payne that I wanted to manufacture glue for them and under the process that I had given them, and my impression is that the proposition was that I should have $5,000 a year salary as superintendent and one-half the saving—no, it was ten per cent. of the saving in that proposition, I think, over the cost of other glue to them. Do you want me to go on, Mr. Felt?

Q. 68. Yes, I ask you for all the conversation.

A. Mr. Payne told me that they would consider the matter and decide it in one week's time. At the end of that week I called upon Col. Payne and he told me that he had concluded not to go into the glue business. I then told him that they promised and agreed with me that they would not go into the glue business, and that if they did I should sue them. He told me that he did not care how much I sued, that they paid their lawyers by the year. I then left.

Q. 69. Now, for what purpose did the Standard Oil Company, the defendant, use glue in their business?

A. For gluing their oil barrels.

Q. 70. Inside or out?

A. Inside.

Q. 71. And was it for that purpose that you proposed to manufacture glue for them?

Objected to as leading.

A. Yes, sir.

Q. 72. And was it so stated in the conversation you had with them?

Same objection.

A. Yes, sir; it was.

57 Q. 73. Did you subsequently write a letter to the defendant and deliver it to them?

A. I did; yes, sir.

Q. 74. When?

A. About January 10th.

Q. 75. What year?

A. 1873; about that time.

By Mr. BEAMAN:

Q. 76. '74?

A. '74.

By Mr. FELT:

Q. 77. Did you deliver that letter personally?

A. I think I did. I think I delivered almost all of my letters to them personally.

Q. 78. Where was that letter written?

A. Cleveland; Weddell house, Cleveland.

Q. 79. Have you a copy of that letter?

Objected to as incompetent, no notice having been given in regard to the original production thereof.

Paper marked for identification Exhibit A, February 14th, 1888.

Q. 80. Did you also write at Cleveland and deliver to them a letter dated January 12th, 1874?

A. I did; yes, sir.

Q. 81. Is that a copy of the letter?

A. That is the original letter.

By Mr. BEAMAN:

Q. 82. That is the original?

A. Yes, sir.

Q. 83. The letter that you wrote to them?

A. Yes, sir.

By Mr. FELT:

Q. 84. To whom did you hand this letter?

A. Col. Payne, O. H. Payne.

Letter marked for identification Exhibit B, February 14th, 1888.

Q. 85. Was Mr. O. H. Payne an officer of the defendant at that time?

A. He was; yes, sir.

58 Q. 86. Did you hand this to Col. Payne, Col. O. H. Payne?

A. To Col. O. H. Payne.

Q. 87. Where?

A. At his office, the Standard Oil Company, in Cleveland.

Q. 88. What did he do with it?

A. He took it to the back office and told me to call again. I called and he handed me back the letter.

Q. 89. When did you call?

A. The same day.

Q. 90. The same day?

A. Yes, sir; the same day.

Q. 91. After how long an interval?

A. Well, three or four hours, I think.

Q. 92. Did he return the letter to you?

A. He did; yes, sir.

Q. 93. And that is the letter now?

A. That is the letter.

Q. 94. What did he say to you?

A. He said that——

Q. 95. Did you make a memorandum of what he said to you at the time on the back of the letter?

A. I did on the back of the letter; yes, sir.

Q. 96. And is the substance of it as written on the back of the letter?

A. Yes; that is it on the back of the letter.

Q. 97. Did you write at Cleveland and deliver to them another letter on or about the third or fourth of February, 1874?

A. I did; I wrote them a letter and mailed it to their office.

Q. 98. Did you keep a copy of that?

A. I did not.

Q. 99. Did you subsequently receive an answer to that communication from any officer of the defendant?

A. I did from O. H. Payne.

Q. 100. And is that the answer you received (showing witness letter)?

A. It is.

By Mr. BEAMAN:

Q. 101. What is the date?

A. Dated February 5th, 1874.

Letter marked Exhibit C for identification.

59 By Mr. FELT:

Q. 102. Did you on the 6th of February, '74, at Cleveland, write and deliver to them another letter?

A. I wrote them a letter; I think I mailed it.

Q. 103. Have you a copy of that letter?

A. I have; yes, sir.

Q. 104. Are you sure that you either delivered it personally or mailed it?

A. Yes, sir.

Q. 105. Is that a copy of the letter?

Objected to as incompetent.

A. It is; yes, sir.

Letter marked Exhibit D for identification, February 14th, 1888.

Q. 106. When first did you learn that the defendant was lining the inside of its barrels by the process described in your patent?

A. I think some time in June.

Q. 107. What year?

A. '74.

Q. 108. State how you learned it.

A. I could not say positively how I learned it at that time; I do not remember.

Q. 109. Please state why you did not institute proceedings to restrain said infringement after obtaining such information.

Objected to as incompetent.

A. Because I was too poor to do so; I could not afford to fight so large a corporation.

Q. 110. And when were you able to do so?

A. Not until lately.

Q. 111. What do you mean by lately?

A. Within the last year or so.

Q. 112. You still own these patents, do you not?

A. I do; yes, sir.

Q. 113. You have never parted with any interest in them?

A. I have not, sir.

60 Q. 114. In describing what you have termed your process to the officers of the defendant, as you have stated you did, what, if anything, was said by you to them about applying the glue as a coating in a liquid form?

Same objection.

A. Well, I told them the liquid form would be more desirable; would be better, cost less, save all the expense of drying, labor, and the uncertainties of the weather spoiling and deteriorating in its qualities.

Cross-examination by Mr. BEAMAN:

X Q. 1. Have you a good memory, Mr. Leggett?

A. A very fair one; yes, sir; for business a very fair one.

X Q. 2. When did you first consult any counsel with reference to your rights with the Standard Oil Company?

A. I think I consulted them in Pittsburg.

X Q. 3. When?

A. Well, I wrote to them, I think, possibly about '80. I wrote to McClung about it.

X Q. 4. Have you a copy of that letter?

A. I don't think I have any copy of it; no, sir.

X Q. 5. Will you examine and see?

A. What is that, sir?

X Q. 6. Will you examine and see if you have a copy of that letter?

A. I will, but I am very positive I haven't a copy of it. I very seldom copy my letters.

X Q. 7. Where did you write it from?

A. I think I wrote it from New York; possibly Elizabethport.

X Q. 8. Did you ever consult with anybody about it before, anybody you remember?

A. Not that I remember. I might have talked with some-
61 body about it, but I didn't feel that I could afford it. McClung thought I had a good case, but I didn't feel that I could afford the expense and didn't care to undertake it.

X Q. 9. When did you next consult about it?

A. Not until I consulted Mr. Reed and Mr. Felt, about a year ago or so.

X Q. 10. Mr. Reed, who is here present?

A. Yes, sir.

X Q. 11. Did Mr. McClung write you about this matter?

A. He did; yes, sir.

X Q. 12. Have you got his letter?

A. I don't know whether I have it or not.

X Q. 13. Have you his letter? Will you search and see?

A. I will; yes, sir.

X Q. 14. Didn't he write you more than once?

A. I think he did. I think he did twice.

X Q. 15. Did you write to him?

A. Yes, sir; I believe I did.

X Q. 16. Will you search and produce all the letters you have received from him on this subject and get copies of letters that you have written to him?

A. Yes, sir; I will.

X Q. 17. Before you consulted Mr. Reed and Mr. Felt in this matter had you ever consulted them before as counsel?

A. No, sir.

X Q. 18. This was your first business relations?

A. Well, I have known Mr. Reed for some time. He boards in the same house with me.

X Q. 19. Yes, but you never had employed him?

A. No, sir.

X Q. 20. Did you consult Mr. Reed before you consulted Mr. Felt?

A. I was introduced by Mr. Reed to Mr. Felt.

X Q. 21. With reference to this special litigation?

A. Yes, sir; with reference to this special litigation.

X Q. 22. When was that, Mr. Leggett?

A. Well, I think it was last April. I think some time back about that time.

62 X Q. 23. Have you ever written to the defendants in reference to this matter since your letter of February 6, 1874?

A. I think I have.

X Q. 24. Have you any copies of any such letters?

A. One letter, I think, I wrote them; I don't know whether I have got a copy of it or not.

X Q. 25. What was the date of it?

A. I could not tell you that now.

X Q. 26. Can you tell what year it was?

A. It may have been 1875—1874, possibly.

X Q. 27. Do you know whether it was 1874 or 1875?

A. I think it was 1874 I wrote; I think I wrote them from Pittsburg.

X Q. 28. Have you a copy of that letter—will you see if you have a copy?

A. I will see if I have.

X Q. 29. Have you seen a copy of that letter recently?

A. Yes, sir; I have seen a copy of it.

X Q. 30. Where?

A. I had it in my possession.

X Q. 31. When?

A. In my possession this morning.

X Q. 32. Where—in this room?

A. In this room; yes, sir.

X Q. 33. Will you see if it cannot be found now?

A. Yes, sir.

X Q. 34. Have you found it?

(Letter handed to counsel.)

X Q. 35. Is this copy of the letter you have handed me, dated November 14, 1874, the only copy of letter that you have that you wrote to them?

A. Yes, sir; I think so.

X Q. 36. You have seen no other?

A. No, sir.

X Q. 37. And you have never written them in regard to this matter since then?

A. Not that I remember of.

X Q. 38. Have you ever had a verbal conference with them about these matters since then until this litigation?

A. No, sir; I never have.

X Q. 39. Either with Mr. Flagler or Mr. Rockefeller?

63 A. I saw Mr. Flagler at the hotel one time, I think, and I said something to him about it, but he didn't pay much attention to it, and said if I had any grievance to go to the company about it.

X Q. 40. When was that?

A. I think that was in 1874; might possibly have been 1875.

X Q. 41. Since then have you ever had any conversation with

Mr. Flagler or Payne or Rockefeller or any of the gentlemen of the company?

A. No, sir.

X Q. 42. And you brought this suit without any further communication with them or any kind, either oral or in writing, than you have now presented?

A. Yes, sir; without any further communications.

X Q. 43. Did you ever go to their works at Cleveland?

A. Not since I left there.

X Q. 44. Did you take any means of inquiring what process they were using?

A. I did; yes, sir.

X Q. 45. What did you find out?

A. I found that they were using the process as I described it to them.

X Q. 46. All the time?

A. All the time; yes, sir.

X Q. 47. How did you know this?

A. All my inquiries led me to think they had been using it all the time.

X Q. 48. You had this knowledge and information from 1874 way down until you began this suit?

A. Yes, sir.

X Q. 49. During that time did you have any other litigations on your patent?

A. No, sir.

X Q. 50. Or any other patent?

A. No, sir.

X Q. 51. Have you had any patent litigations since 1874 except this?

A. No, sir; none except this.

X Q. 52. Have you granted any license to use this patent here in suit by anybody?

A. No sir; I have not.

X Q. 53. Have you known of its use by anybody?

A. Yes, sir.

64 X Q. 54. Whom?

A. In Pittsburg.

X Q. 55. By whom?

A. Lockhart & Frew commenced to use it.

X Q. 56. Anybody else?

A. The American oil works used it and Holdship & Irwin. They refused to pay royalty because the Standard did not. I think most all of them have used it in Pittsburg, so far as my knowledge goes.

X Q. 57. Did you ever bring any suit against them?

A. No, sir.

X Q. 58. Against any of them?

A. No, sir.

X Q. 59. You speak of using it, but describe in short what you call it.

A. I call using glue manufactured from hide cuttings after the usual process of glue manufacture—boiling it to a certain consistency and putting the liquid glue in the barrels and allowing it to dry there for the first time.

X Q. 60. What part of that did you consider as new with you?

Objected to as calling for the witnesse's construction of his invention, which is a matter for the court and not for the witness.

A. I consider as new the boiling of the glue to a certain consistency and allowing it to dry in the barrels for the first time, thus saving the expense of carrying on the process and remelting the glue and putting it into the barrels.

X Q. 61. What is the date of your invention?

A. '73.

X Q. 62. What part of '73?

A. 29th of September, '73, the patent was applied for.

X Q. 63. I am not asking you when it was applied for, but when you made this invention.

By Mr. FELT:

X Q. 64. When you made the discovery.

A. I think I made the discovery about '71 or '72—made up my idea on it fully.

65 By Mr. BEAMAN:

X Q. 65. Where did you get your idea on it fully?

A. Seeing the barrels glued as oil-refiners then glued them and by my experiments in testing glue and testing stock; making glue, as it were, on a small scale and finding liquid glue was just as good, if not better, than the dried glue, which, by the way, some American manufacturers doubted.

X Q. 66. When did you first glue a barrel?

A. I first glued a barrel in Pittsburg in about June, '74. I think it might have been a little earlier than that; May, possibly.

X Q. 67. How did you happen to glue a barrel then?

A. It was August. I made a mistake in that.

X Q. 68. How did you happen to glue a barrel then?

A. Well, I made an agreement with Holdship & Irwin. I went, as you might say, into partnership with them. They agreed to furnish the stock or plant and give me one-half the profits over the former cost of the glue.

X Q. 69. How long did you continue working for them?

A. Well, I continued with them, I think, four or five months. I think, maybe, a little longer—maybe six months.

X Q. 70. Did you there practice your invention as you understood it?

A. I did; yes, sir.

X Q. 71. And with all the skill that you had?

A. Yes, sir.

X Q. 72. You never had glued a barrel before?

A. No, sir.

X Q. 73. Either with your process or by any other process?

A. I had seen them glued, but never glued any myself.

X Q. 74. Had you ever seen any glued by your process?

A. No, sir; never.

X Q. 75. You had seen them glued by what you call the old process?

A. By the old process; yes, sir.

66 X Q. 76. And not until October, '74, had you glued a barrel by your process?

A. August, I think it was.

X Q. 77. Had you ever seen one glued by your own process?

A. No, sir.

X Q. 78. What was the old process?

A. The old process was to buy glue that happened to strike the refiner, and some bought high-priced and others low-priced glue, and they would remelt that glue, add so much water to it, dissolve it, heat it up in their kettles, take about a gallon of it and pour it into a barrel, bung it up, and roll the barrel around until the glue would go into the worm holes and stick to the inside of the barrel, and then they would pour out the remaining glue and allow the barrel to dry before using.

X Q. 79. How long had you known this process to have been in use?

A. Well, I think from about '65. I think from my first knowledge of oil barrels.

X Q. 80. Do refiners use different qualities of glue?

A. Yes, sir; different qualities of glue.

X Q. 81. Are there any different qualities of glue?

A. Yes, sir; a great many.

X Q. 82. Your invention, as you understand, is not confined to one quality of glue?

A. Not to one quality; no, sir.

X Q. 83. Any kind of glue?

A. I don't say any kind of glue; any suitable stock to make good work; to make good glue.

X Q. 84. The better the glue the better the work?

A. Yes, sir; the better the glue the better the work.

X Q. 85. And it was just so with the old process, wasn't it?

A. It was.

X Q. 86. It is true with your process and with the old process that the better the glue the better the stock?

A. Yes; that is, the better the work.

X Q. 87. The principle is the same with the old process

67 whether it was good or poor glue?

A. Yes; they both may be used.

X Q. 88. Is the principle the same with your process whether the quality of the glue is good or poor?

A. It would be; yes, sir.

X Q. 89. Practically?

A. It don't work so well if it is poor glue; it would not work out so well.

X Q. 90. But the object is the same?

A. Good glue will make a better lining—make a stronger lining—and the oil would be less liable to leak out. A man might take his chances and use poor glue and the oil might go through.

X Q. 91. Whether he used your process or the old process?

A. Yes; but for fine work and good work my process was the best. The glue was better at very much less cost.

X Q. 92. Mr. Leggett, have you ever since you worked for this Pittsburg firm glued any barrels?

A. Not directly; no, sir.

X Q. 93. What do you mean by directly?

A. I have manufactured the glue for them and shippod it to them.

X Q. 94. For whom?

A. Lombard & Ayres. They have a refinery over near my place. I have made glue at my factory and sent it over to them.

X Q. 95. You have sent them glue over there?

A. Yes, sir.

X Q. 96. Anywhere else you have had any experience?

A. No; not that I remember.

X Q. 97. Have you sold glue to other manufacturers since '74? Other refiners, I mean.

A. No, sir. Do you mean liquid glue?

X Q. 98. I mean any kind of glue.

A. Oh, yes. To refiners?

X Q. 99. Yes.

A. Not directly. I have sold some to Lombard & Ayres. I don't remember any other parties.

X Q. 100. How long did you sell it to them?

A. I think about six months.

68 X Q. 101. When was that time?

A. Well, it was—it must have been about '80 somewhere.

X Q. 102. Can you remember the year?

A. I could not. I could find it over to the works probably by our books.

X Q. 103. What kind of glue did you sell them?

A. I sold them liquid glue in a jelly form.

X Q. 104. What do you call liquid glue?

A. The glue that comes from the kettle, liquid glue or glue soup from the boilers before it becomes dried. When I sold it to them it was in jelly form.

X Q. 105. Is that what you call liquid glue jelly?

A. It will jelly as soon as there is an absence of heat.

X Q. 106. Was it jelly when you sold it to them?

A. Yes, sir.

X Q. 107. Not dried glue?

A. No, sir.

X Q. 108. How did you sell it, by the barrel?

A. By the pound.

X Q. 109. In barrels?

A. In barrels; yes, sir.

X Q. 110. How long after you had made it?

A. How long after I had made it? I made and packed it probably as soon as the glue got cold enough to stay in the barrels.

X Q. 111. Did you sell it in open barrels?

A. Open barrels, yes—that is, we headed up the barrels—flour barrels; we put it in flour barrels.

X Q. 112. When the glue had become hard, the temperature of the room?

A. Yes, sir.

X Q. 113. And had formed a jelly you sent it to Lombard & Ayers?

A. Yes, sir.

X Q. 114. What did they do with it?

A. Put it in their barrels.

X Q. 115. In their oil barrels?

A. Yes, sir.

X Q. 116. Just as it was?

A. They put it in their kettles.

X Q. 117. Added water to it?

A. They might possibly, I don't know; they might have evaporated it down to a thick form and added water to it.

69 X Q. 118. Do you think it was too thick for them or too thin?

A. I think it was about right for them to use.

X Q. 119. Was not what you sold called size sometimes?

A. Yes; called size.

X Q. 120. What is the difference between size and what you sold them?

A. I don't know of any difference; there may be some difference in the quality.

X Q. 121. What is size?

A. It is the same as liquid glue.

X Q. 122. Is liquid glue and size one and the same thing?

A. Yes, sir; one and the same.

X Q. 123. Lombard & Ayers took the size you sold them and put it in their kettles and heated it up to the proper temperature and dipped it out and put it in the barrels?

A. Yes, sir.

X Q. 124. Did they use what they called your invention, as you understand?

A. Yes.

X Q. 125. They didn't make their own glue, but used your invention?

A. They used my glue.

X Q. 126. Did they use your patent invention?

A. I should not think that they did, because I sold it to them. If other parties had sold it to them they would have used my invention.

X Q. 127. And anybody who uses size and melts it and puts it into oil barrels uses your invention whether he makes the size or not?

A. Yes, sir; that is my idea of it exactly.

X Q. 128. If he buys hard glue and puts water to it, then he don't use your invention?

A. No; he does not.

X Q. 129. What is the difference between size and hard glue?

A. The absence of water.

X Q. 130. How do you convert size into hard glue?

A. By evaporating it down by steam or drying it in the air.

X Q. 131. Is there any difference between size and hard
70 glue except that one has more water than the other?

A. I think the size has possibly more strength to it before it is dried.

X Q. 132. Is there anything in it besides? I mean, is there any difference in the composition of size from glue except that one has more water than the other?

A. You, I suppose, mean equal qualities take the same stock?

X Q. 133. Yes; take the same stock.

A. No difference except the water.

X Q. 134. If you had a barrel of size and should take on one-half of the barrel and dry it and make dried glue of it all you would have done would be to evaporate the water?

A. Well, yes; you would change the nature of the glue somewhat—make it harder, more brittle.

X Q. 135. Suppose you take the very glue again and add water to it?

A. Certainly it comes back, but its nature is changed.

X Q. 136. Do you think, Mr. Leggett, you can tell whether size has been made from hard glue?

A. We could with our own glue.

X Q. 137. Do you think you could tell, Mr. Leggett, when I bring you, as I may hereafter, portions of size, some of which has never been in the condition of hard glue and some of which has been made from hard glue?

A. I might not be able to pick it out; I might by experiments. I think I could.

X Q. 138. Do you think one would stick better than the other—would be a little stronger?

A. Well, one is more elastic than the other; has a different—I can't exactly describe it; it has a different nature to it—softer; it is not so hard.

X Q. 139. How long have you known such a thing in the market as size or liquid glue; liquid glue and size are one and the same thing, aren't they?

A. Well, liquid glue, Mr. Beaman, has been known usually in years back as hard glue dissolved; do you see?

71 X Q. 140. Yes.

A. Now, my father in '56 or '57, before Spaulding ever started, used to manufacture liquid glue by dissolving hard glue, and it is so done now. Spaulding makes glue that way, and that is known as liquid glue.

X Q. 141. That is not in jelly form?

A. That is not. They bring it down to a certain consistency and put acid in it to keep it from spoiling.

X Q. 142. Liquid glue you have known for how many years?

A. Since '55 or '56.

X Q. 143. How long have you known size in the market?

A. Do you mean people using size?

X Q. 144. Oh, using or manufacturing it and selling it.

A. Well, I should say from about 1860; probably somewhere along there.

X Q. 145. Did your uncles manufacture and sell size?

A. No, sir.

X Q. 146. When did you first have to do with the selling of size?

A. I don't believe I ever sold any size until after I made this invention.

X Q. 147. What did you know of the manufacture and sale of size before 1872 or '73?

A. Well, I have seen them manufacture size, wall-paper men.

X Q. 148. Have you never seen glue manufacturers make size?

A. I have seen them make glue.

X Q. 149. Have you not seen them make size?

A. They cannot make glue without they manufacture size, very well.

X Q. 150. Do you mean to say that they cannot make glue without making size?

A. Well, in the first place you have got to boil your size out of glue pieces, and then you have got to take that size and cool it down to a jelly and cut it up and dry it. You cannot very well make it without materials, Mr. Beaman.

X Q. 151. What you call glue scraps—what do you call the first product you get from them?

A. Size, glue soup.

72 X Q. 152. Do you call that size whether in jelly form or liquid form?

A. Well, it would be the same thing, except the absence of heat; that is all.

X Q. 153. Then that is size, and you say that size has been made by every man that ever made glue?

A. Yes, sir.

X Q. 154. And size is nothing but glue in a jelly form—substantially jelly or liquid form?

A. Yes, sir.

X Q. 155. Did you know that glue-makers used to make and sell such size before 1873?

A. I don't think I had any knowledge of their selling it before '73. I might have had; I don't say.

X Q. 156. You never sold it yourself?

A. No, sir; I never sold it myself.

X Q. 157. Didn't your uncles make it for sale?

A. No, sir. I could not say whether it was sold or not; I don't remember.

X Q. 158. Who drew your patent specification?

A. Leggett & Leggett drew the first one.

X Q. 159. Are they relations of yours?

A. Distant—third cousins, I think.

X Q. 160. Where were they then?

A. In Washington at that time.

X Q. 161. Did you go and see them?

A. Yes, sir; I did.

X Q. 162. When?

A. In September, '73.

X Q. 163. How long before the date of your application?

A. I think my application was just at the time I was there.

X Q. 164. Was your application made from information furnished to your relatives by yourself?

A. Yes, sir.

X Q. 165. Had Mr. Leggett then been Commissioner of Patents?

A. He was at that time, I believe.

X Q. 166. And this was himself and one of his sons or brothers that were doing business outside?

A. I think his sons were doing business outside.

X Q. 167. They were relatives of yours?

73 A. Very distant. You might call them relatives—third or fourth cousins.

X Q. 168. Well, you knew them?

A. Never knew them before. I believe I had heard of them, but never knew them personally.

X Q. 169. Did you carry with you a written description of your specification?

A. I don't know whether I did or not.

X Q. 170. Did you ever make any written description of it before you went down to Washington?

A. I don't remember.

X Q. 171. Can't remember anything about it?

A. Not about my writing out a description.

X Q. 172. You have no memory about it?

A. No, sir.

X Q. 173. Did you see Mr. Leggett, the Commissioner of Patents, about it?

A. I saw Mr. Leggett—yes, sir—while I was there.

X Q. 174. Where?

A. I think I was introduced to him in his office.

X Q. 175. Commissioner of Patents' office?

A. Yes, sir.

X Q. 176. Did you talk about your patent?

A. Well, I presume I did.

X Q. 177. Why do you presume?

A. Because it was natural that I should.

X Q. 178. Why natural?

A. If you wanted to know a thing you would be very apt to talk about it.

X Q. 179. Did you talk to these gentlemen—did you talk with Commissioner Leggett before you talked with your attorneys?

A. I did not; no, sir.

X Q. 180. Did you talk with the Commissioner of Patents about the specification—the nature of the claim?

A. I think I did; yes, sir.

X Q. 181. Did you have several interviews with him or his sons about the specification?

A. I don't know as I did. I never talked about the specification to my knowledge.

74 X Q. 182. What did you talk about?

A. Whether it was patentable.

X Q. 183. Talked with Commissioner Leggett?

A. I think I did, after.

X Q. 184. Was that after the application was drawn?

A. Yes, sir.

X Q. 185. At the time you talked with him had his sons drawn the specification?

A. I think they had.

X Q. 186. Had they a copy of the specification with them when you talked with him?

A. I don't remember.

X Q. 187. Had they drawn the claim?

A. I think they had; yes, sir.

X Q. 188. Who drew the claim?

A. I can't remember the name of the particular brother who drew the claim. I have not seen him since.

X Q. 189. How long were you in Washington?

A. I don't think I was there very long.

X Q. 190. Did you get your patent before you went away?

A. No; not quite.

X Q. 191. What do you mean by not quite?

A. I didn't get it before; it takes some time to get a patent issued.

X Q. 192. Was it allowed before you went away?

A. No, sir; I think it was six weeks afterwards.

X Q. 193. Did you see any of the examiners about it?

A. No, sir; I did not.

X Q. 194. Never spoke to the Commissioner and his sons?

A. Never to the Commissioner.

X Q. 195. Was the specification approved by you?

A. It was.

X Q. 196. Just as you wanted it?

A. Just as I wanted it; yes, sir.

X Q. 197. You had had already some of these consultations with the officers of the defendant company, had you not, before you went on for your patent?

A. I did; yes, sir.

75 X Q. 198. Had you told them what your secret was before you applied for the patent?

A. I had; yes, sir; that is the reason I got out the patent. I told them my secret and I thought I had no protection.

X Q. 199. What do you mean by had no protection?

A. Well, I made up my mind I had made a fool of myself.

X Q. 200. How?

A. Telling them without having it in writing.

X Q. 201. How did you undertake to protect yourself?

A. By this patent.

X Q. 202. Was that the object of your going to Washington?

A. That was the object of my going to Washington.

X Q. 203. Please explain again why you went to Washington.

A. To get the patent.

X Q. 204. Why?

A. For protection.

X Q. 205. Protection against whom?

A. The Standard Oil Company.

X Q. 206. How was that going to protect you?

A. I thought at that time that if I had a patent it would hold good, be valuable; that they would not be able to use it without compensating me for it.

X Q. 207. That is the reason you went for the patent?

A. Yes, sir.

X Q. 208. When did you determine you had made a fool of yourself?

A. Very soon after I had left.

X Q. 209. Very soon after you had left where?

A. The Standard Oil Company's office.

X Q. 210. On what day?

A. I could not tell you exactly what day.

X Q. 211. Was it before September 29th?

A. Yes, sir; before September 29th.

X Q. 212. You made up your mind you had been a fool, did you?

A. Well, that I had been very foolish in imparting my process and knowledge without having it in black and white. I then went as soon as possible for a patent.

76 X Q. 213. Did you consult with any lawyers whether you had been a fool?

A. No, sir; I did not.

X Q. 214. You thought you had made a fool of yourself?

A. Well, I thought I had been very foolish after the excitement was over to have told anything without having it in black and white.

X Q. 215. What?

A. Their promise.

X Q. 216. Didn't you have it in black and white?

A. No, sir.

X Q. 217. And didn't you ask to have it in black and white?

A. I did not.

X Q. 218. You never asked to have it in black and white?

A. No, sir.

X Q. 219. Did you give them your secret in black and white?

A. I did not; no, sir.

X Q. 220. What do you mean by black and white?

A. I mean on paper, in writing.

X Q. 221. Then the promises and agreements you talk about with them you have no writing for with them of any kind, have you?

A. No, sir.

X Q. 222. Never have had?

A. No, sir.

X Q. 223. When you went to Washington to consult about getting your patent did you tell your cousins about this conversation you had had with the Standard Oil people?

A. I don't think I did. I may have done so, possibly.

X Q. 224. No memory?

A. I don't think I did.

X Q. 225. Did you tell the Commissioner of Patents about it?

A. I don't think I did. I am positive I did not.

X Q. 226. Did you confer with them as to whether this patent would protect you or not?

A. I did not. My knowledge of patents at that time was quite limited. I know more about them now.

X Q. 227. When did you first talk with your present counsel in regard to this conversation with the officers of the defendant?

A. I think I talked with Mr. Reed about it some time about a year ago.

77 X Q. 228. Before this suit was brought?

A. Well, some time before the suit was brought.

X Q. 229. When you first consulted with him about it?

A. Yes, sir.

X Q. 230. When did you first talk with Mr. Felt about it?

A. Some time after, I think.

X Q. 231. How long after?

A. I think about a month afterwards.

X Q. 232. Before the suit was brought?

A. I think so; yes, sir.

X Q. 233. What did you tell them?

A. I told them the case just as it was.

X Q. 234. Just as you have told it to-day?

A. As near as possible; yes, sir.

X Q. 235. Did you show them the letters?

A. Yes, sir; I did.

X Q. 236. Just as you have produced them to-day?

A. Yes, sir.

X Q. 237. That was all done before this suit was brought?

A. Yes; all done before this suit was brought.

X Q. 238. Both of them?

A. Yes, sir.

X Q. 239. Did you talk with them together about it before the suit was brought?

A. I think I did; yes, sir.

X Q. 240. How long has your counsel had possession of these letters that have been produced here to-day?

A. Well, they have had them ever since I first talked with them about it.

X Q. 241. You turned the papers over to them at that time and they have had them ever since?

A. I have had them occasionally since, but otherwise they have had them all the time.

X Q. 242. Are you certain that you are right that they have had these letters since before this suit was brought?

A. Well, to the best of my knowledge, they have.

X Q. 243. You have not had them, have you?

A. I don't think so, except occasionally.

78 X Q. 244. Was it not talked over at that time as to whether it was best to base this suit on your contract and these letters?

Objected to on the ground that the witness's communications with his counsel are privileged and should not be inquired into, and the witness is instructed not to answer the question.

Adjourned to—

NEW YORK, *February* 18, 1888.

Met pursuant to adjournment.

Present: Counsel as before.

Cross-examination of EDWARD W. LEGGETT resumed by Mr. BEAMAN:

X Q. 245. Have you since the last examination read over your testimony?

A. I have; yes, sir. Part of it I would like to correct. In answer to X Q. 66 I said that I first glued a barrel at Holdship & Irwin's. I now remember that I made one boiling of glue and glued a barrel at the Central Oil Refining Company at Pittsburg in April, 1874.

X Q. 246. But before April, '74, you had never glued any?

A. I had not; never that I remember now.

X Q 247. How did you come to make these experiments at the Central oil refinery?

A. They desired me to prove that I could glue barrels, and I bought some stock and they put up a tub for me and I made the glue there and glued the barrel—that is, made the material for the barrel.

X Q 248. What did they put up for you?

A. They put up a barrel.

X Q. 249. Describe it.

A. An ordinary oil barrel with a coil at the bottom of it, and over that there was a false bottom.

X Q. 250. Describe just what you did.

79 A. I took these hide trimmings—hide pieces—and washed them in a little stream there.

X Q. 251. A little what?

A. A little stream there—a little river—and after I washed them clean I put them in this barrel and boiled them down to the proper consistency for gluing barrels.

X Q. 252. What did you add to them?

A. Covered the cuttings with water.

X Q. 253. Nothing else?
A. Nothing else; no, sir.
X Q. 254. How long did you boil them?
A. I think I simmered them pretty nearly all one day and part of the next, if I remember correctly.
X Q. 255. What heat did you have?
A. I should say about 200° heat.
X Q. 256. Did you have a thermometer?
A. No, sir; not that I remember now, I did not.
X Q. 257. How did you get your heat?
A. Well, I kept them below the boiling point.
X Q. 258. How did you cause your heat?
A. By steam.
X Q. 259. Live steam?
A. No, sir; steam passing through the coil.
X Q. 260. The coil in the bottom of the barrel?
A. In the bottom of the barrel; yes, sir.
X Q. 261. What kind of scraps were these?
A. These were pieces of hide—quite long strips.
X Q. 262. Where did you get them?
A. Bought them of Baeder, Adamson & Co., of New York.
X Q. 263. Were they of tanned hides or green hides?
A. A. They were prepared stock—limed stock.
X Q. 264. Such as is called glue-makers' stock?
A. Well, more paper-makers' stock.
X Q. 265. What do you mean by paper-makers' stock?
A. Well, it was stock prepared and ready for washing and boiling out the size; all that had to be done was to wash it. I think, if I remember right, I paid fifteen cents a pound for it.
80 X Q. 266. What do paper-makers use it for?
A. For sizing.
X Q. 267. What do you mean by sizing?
A. Well, I mean glue soup or liquid glue.
X Q. 268. How do they get glue soup or size from this kind of scraps?
A. Well, they boil it out.
X Q. 269. Add water to it?
A. Yes; add water.
X Q. 270. And heat it?
A. And heat it; yes, sir.
X Q. 271. Is that all that is necessary?
A. For what kind of paper—do you mean wall paper?
X Q. 272. I don't say wall paper, but to make what they call size.
A. To make size that is all that is necessary.
X Q. 273. And size is glue, as I understand it?
A. Well, hardly glue until it is dried; no, sir.
X Q. 274. Size will stick things together, won't it?
A. Yes, sir.
X Q. 275. Can you do with size anything you can do with glue, with hard glue?

A. I think you can; yes, sir.

X. Q. 276. And use it for any purpose you can use hard glue?

A. Certainly, if it is evaporated down to the proper consistency.

X Q. 277. You took these scraps you bought and made size of them?

A. Yes, sir.

X Q. 278. When you made size how did it differ from such size as paper-makers would have made if they had bought the same scraps?

A. It would require stronger, heavier size for barrels than for paper.

X Q. 279. What do you mean by heavier?

A. It would contain more glue.

X Q. 280. Do you mean that you would boil it down thicker?

A. Yes, sir.

X Q. 281. Anything else?

A. Well, paper-makers use alum with their size always.

X Q. 282. Anything else?

A. Sometimes they mix rosin with it.

81 X Q. 283. Any other difference?

A. Not that I know of; not that I can think of now.

X Q. 284. Why do paper-makers use alum and rosin?

A. To harden the size and make it more insoluble.

X 285 Q. More what?

A. Insoluble.

X Q. 286. When do they add it?

A. After they boil it.

X Q. 287. After the size is all made?

A. Yes, sir; after the size is boiled, after the size is made.

X Q 288. And after they have made their size and before they add their alum and rosin it is just such size as you made at Pittsburg?

A. Similar, only as a rule it would not contain as much glue in it.

X Q. 289. You mean by that it would contain more water?

A. Yes, sir.

X Q. 290. Any other difference?

A. No, sir; no other difference?

X Q. 291. When you got this size made at this factory in Pittsburg you could use that size, as I understand, for any purpose for which hard glue is used, could you not?

A. No, sir, I don't think you could.

X Q. 292. Why not?

A. Because it might not be strong enough for other purposes. If it was evaporated down lower and made stronger or thinner, as the case might require, it could be used.

X Q. 293. If you wanted to use glue of that consistency, why you could have used it for any purpose you could have used hard glue?

A. Yes, sir.

X Q. 294. And if you wanted to use thinner glue all you had to do was to add water to it?

A. Yes, sir.

X Q. 295. And if you wanted thicker glue or size you would boil it more?

A. Yes, sir; evaporate it down.

X Q. 296. With that exception of putting more water to
82 it and evaporating the water, that size was ready to be used for any purpose for which you could use hard glue, wasn't it?

A. Yes, sir.

X Q. 297. Glue in its hard state is of no use at all, is it, for any purpose except to sell?

A. No; I think not. Well, there may be some purposes for which it is used I don't think of now.

X Q. 298. But you do not know of any?

A. Well, they use glue for making cards, you know, and such things as that. I have heard of their making cards in its hard state.

X Q. 299. The card would be practically a sheet of glue, if I understand you?

A. A sheet of glue; yes, sir.

X Q. 300. How many barrels did you glue at Pittsburg?

A. At this time I do not remember just how many barrels I glued; possibly one hundred or two hundred.

X Q. 301. You glued them just the same as you had seen them glued at other works?

A. Yes, sir; just the same as glued at other works.

X Q 302. No difference in the process of gluing them after you once get your soup—after you once have your soup made?

A. No, sir.

X Q. 303. Is there any difference between your process of gluing except in the way you make your soup from the old process?

A. I think not, sir, only I consider it better.

X Q. 304. But whether it is better or not there is no difference in the process after the soup is once made?

A. No difference in the process; no, sir.

X Q. 305. The old process of taking hard glue and reducing it to soup or adding water to it and warming it?

A. No, sir; and heating it up.

X Q. 306. And your process makes soup without reducing the glue to its hard state?

A. Yes, sir.

X Q. 307. But when the soup is made the process goes on just the same, does it not?

A. Yes, sir; you are correct there.

X Q. 308. Now, you never glued any more barrels at these
83 works in this way?

A. I did not; no, sir. It was perfectly satisfactory.

X Q. 309. Now, Mr. Leggett, what was the date of the interview with the officers of the defendant at which you told them your secret?

A. It was some time in September.

X Q. 310. Can you tell what time?

A. I could not exactly; no, sir.

X Q. 311. Was it before the fifteenth or afterwards?

A. I think it was somewhere about the fifteenth or twentieth.

X Q. 312. How do you fix the date?

A. Simply by gauging from the date of my patent.

X Q. 313. How does that enable you to tell?

A. Because very shortly after my interview with them I applied for this patent.

X Q. 314. Did you make your application for this patent before you had your interview with them?

A. I did not; no, sir.

X Q. 315. The interview at which you gave them your secret was before you made any application whatever for a patent—for this patent?

A. Yes, sir.

X Q. 316. At the time you gave them your secret had you any idea of patenting your invention?

A. Of patenting it? No; I had not, sir.

X Q. 317. Did you tell them you were proposing to patent it?

A. I did not; no, sir.

X Q. 318. Did you talk with them as to whether it was patentable or not?

A. I did not; no, sir.

X Q. 319. Nothing was said about a patent or patentability of it?

A. No, sir.

X Q. 320. Was it spoken of as an invention or a secret?

A. As a secret.

X Q. 321. You are certain about that?

A. Yes, sir.

X Q. 322. Certain you did not tell them at that time that you were going to get a patent for it?

A. No, sir.

84 X Q. 323. And they certainly did not ask you to get a patent for it?

A. I do not think they did, sir.

X Q. 324. I want you to remember as well as you can, Mr. Leggett. This was some time ago, you know.

A. Certainly; I will give you my best recollection.

X Q. 325. You have no memory of talking with them about it—about a patent?

A. No, sir; not at that time.

X Q. 326. Or about an invention; it was simply a secret?

A. Simply a secret; yes, sir.

X Q. 327. After reading over your testimony and thinking the matter over can you give any further details than you have already given as to your conversation with any of these officers of the defendant company?

A. In what respect?

X Q. 328. In any respect.

A. I know that I talked fully about the advantages of the process more than I got—more than I could in my statement. I

told them glue reheated over and over was injured, was damaged by the weather, deteriorated by the weather—decay—and that glue used as I proposed to use it would be better and stronger than the glue dried and made from the same quality of stock and that they would make a very large saving. At that time they were paying twenty-two cents a pound for their glue, and at the figures I gave them they would make their glue at twelve cents a pound.

X Q. 329. Anything else?

A. I don't think of anything else just now. There may be other points I will think of after, but at present I don't think of anything else.

X Q. 330. Did you make any memorandum of this conversation at the time?

A. I did not, sir.

X Q. 331. And what you say is simply a matter of memory?

A. Yes, sir; memory.

85 X Q. 332. Of a conversation that took place fourteen or fifteen years ago?

A. Enforced very forcibly on my mind, Mr. Beaman, very forcibly, because——

X Q. 333. There is no because about it. You have no written memorandum of any kind?

A. I have no written memorandum.

X Q. 334. Now, Mr. Leggett, this conversation which you have just referred to was just before you applied for a patent?

A. Yes, sir; I so stated.

X Q. 335. In which you set forth these several advantages?

A. Yes, sir.

X Q. 336. Who wrote your specification; yourself or your cousins?

A. My impression is my cousins wrote it.

X Q. 337. While you were there?

A. Yes, sir; while I was at Washington, one of my cousins. I don't know which one it was.

X Q. 338. You examined it with him?

A. Yes, sir.

X Q. 339. After this you had this patent reissued, didn't you?

A. Yes, sir; I did.

X Q. 340. Why?

A. Because it did not cover the barrel.

X Q. 341. What barrel?

A. It did not cover the barrel that the size was in. I could not attach a barrel, so I was informed by Burridge & Company, I think it was.

X Q. 342. Who were they?

A. They were patent lawyers in Cleveland, Ohio.

X Q. 343. What did you consult them about?

A. I consulted them about the validity of the patent, whether they thought the patent would hold good. I think they thought it was all right except that clause, that it didn't cover the barrel, and they advised me to have it reissued.

X Q. 344. For what purpose?

A. That it might cover the barrel that the liquid-glue soup was put into.

86 X Q. 345. Did you talk with your cousins about this?

A. I did not. I never saw them after the date of my first patent.

X Q. 346. Did you yourself make an application for the reissue of your patent?

A. Well, Burridge & Company did for me.

X Q. 347. Did you make any affidavit about it or sign any letters about it?

A. No more than the application, I don't think.

X Q. 348. How did you happen to leave out the covering of the barrel in your original application?

A. Well, because I was not versed enough in patent law to draw it up properly.

X Q. 349. Any other reason?

A. That is the only reason I know of.

X Q. 350. Did you talk with your cousins about it?

A. I did not; not that I remember.

X Q. 351. Did you talk with the Commissioner of Patents about it?

A. Not that I remember; no, sir.

X Q. 352. How did you happen to be advising with these Cleveland attorneys about the validity of your patent?

A. Well, I was anxious to know whether the patent would hold against the Standard Oil Company; I wanted to get somebody's advice on it. The Standard Oil Company would not treat with me, would not make a contract with me to glue their barrels, and I wanted to find out what claim I had against them from some lawyer.

X Q. 353. What did they tell you?

A. They told me that the patent was good as far as it went, but advised me to have that clause changed, which I did.

X Q. 354. And the object, then, of this consultation and having this clause changed was to protect yourself against the Standard Oil Company?

A. Yes, sir; that I might be satisfied.

X Q. 355. So at that time you had the Standard Oil Company particularly in mind, had you not?

A. Yes, sir; I had.

87 X Q. 356. After you got the patent for this did you see any of the officers of the Standard Oil Company?

A. I told them I had the patent.

X Q. 357. Did you ever show it to them?

A. I don't think I did. I don't think they asked to see it.

X Q. 358. Did you ever show them the reissued patent?

A. No, sir.

X Q 359. Did you ever tell them you had had it reissued so that it would cover the barrel?

A. I did not; no, sir. I think I sent them a copy of it.

X Q. 360. When?

A. In November, 1874, in Pittsburg.

X Q. 361. The date of this reissued patent is March 10th, 1874?

A. Yes, sir.

X Q. 362. At that time, if I understand you, you had never lined a barrel with glue by your process, had you?

A. I had not; no, sir.

X Q. 363. And never by any other process, had you?

A. I had seen them lined time and time again.

X Q. 364. You had not lined one, had you?

A. No, sir.

X Q. 365. Had you ever opened one that had been lined by your process?

A. I had seen them opened; yes, sir.

X Q. 366. You had never glued one by your process or seen one glued by your process?

A. No, sir.

X Q. 367. At the time you consulted with these attorneys in Cleveland early in 1874 with reference to the reissue of your patent, did you also consult with them as to your rights against the Standard Oil Company in view of any contracts you had with them by reason of having divulged your secret?

Objected to. Witness declines to answer under advice of counsel.

88 X Q. 368. At the time you divulged your secret to the Standard Oil Company how did you suppose they would keep other people from finding it out?

A. I had not got as far as that, Mr. Beaman.

X Q. 369. Was it a secret that would have been easy to have kept secret?

A. I don't know that it would, sir.

X Q. 370. Had you ever spoken to anybody about it before?

A. About what I proposed to do?

X Q. 371. Yes.

A. I think I did to an intimate friend of mine.

X Q. 372. Was he in the business?

A. He was not; no, sir.

X Q. 373. Who was it?

A. Mr. Atwater.

X Q. 374. What Atwater? Give his full name and address.

A. John C. Atwater, 24 West 39th street.

X Q. 375. New York?

A. Yes, sir.

X Q. 376. Any one else?

A. No, sir; not to my remembrance.

X Q. 377. Did you and the officers of the defendant company have any conversation as to how this thing could be kept secret if they used it?

A. We did not; no, sir.

X Q. 378. What did they say to you when you told them this secret?

A. Well, they didn't expect it would work; they doubted that it would work.

X Q. 379. You did not know whether it would work?

A. I was perfectly confident that it would work.

X Q. 380. You had never tried it, had you?

A. Not on barrels, but I had tried it in other ways equally as good.

X Q. 381. At that time you had never tried this invention of yours on barrels of any kind, had you?

A. No, sir; I had not.

X Q. 382. And you never did before you made your application for a patent?

A. I never did; no, sir.

89 X Q. 383. Then at the time you made your application for a patent your process was simply in your mind as something you thought would work?

A. Well, I didn't think it would work; I knew it would work.

X Q. 384. But you had never tried it?

A. Never on barrels, but I had tried it on wood, sticking pieces of wood together.

X Q. 385. Why did you know it would work. Please tell us why you knew it would work.

A. Because I had proved conclusively that glue used from the size was fully equal and better than dried glue remelted and applied to any work.

X Q. 386. You proved to your own satisfaction, if I understand you, that if anybody wanted to use glue for any of the ordinary purposes he could just as well use the size as to use the soup made from hard glue?

A. Provided he could evaporate it low enough to accomplish the same purpose without injuring it.

X Q. 387. Provided he got it to the proper consistency, it was just as good?

A. Yes, sir; without injuring it; put that in.

X Q. 388. That was what you found out by your invention?

A. Yes, sir; by my experiments.

X Q. 389. What experiments had you made?

A. Why, I had boiled out scraps of different kinds and tested them on wood and any number of experiments, and I could not begin to enumerate the experiments I have made in the glue business.

X Q. 390. You found that when you glued wood together with this size it would stick together just as well as if you glued it together with melted glue or the hard glue?

A. Yes; better in most instances.

X Q. 391. What other experiments did you make than sticking pieces of wood together?

A. Well, that was the ordinary way—what other experiments have I made?

X Q. 392. Did you make, yes.

90 A. That was the ordinary manner of experimenting with glue for the strength.

X Q. 393. Is it the ordinary method of determining the strength and quality of glue to glue pieces of wood together to see how they stick?

A. Yes, sir.

X Q. 394. You did not invent that, did you?

A. I didn't claim to invent that; that was the ordinary way of testing glue.

X Q. 395. A good while before your time?

A. Yes, sir.

X Q. 396. The experiment you made was to stick pieces of wood together with glue that had never been dried?

A. Yes, sir.

X Q. 397. The thing you did was to take pieces of wood and stick them together with glue that had never been dried?

A. Never been reduced to hard glue.

X Q. 398. That was all the experiment you made?

A. All that I remember at that time.

X Q. 399. You found that they stuck together as well if not better than when it had been hardened and then reduced?

A. Yes, sir.

X Q. 400. That was the result of your experiments?

A. Yes, sir; it was.

X Q. 401. After you made these experiments you reasoned out that if pieces of wood would stick together this glue would be just as good inside of an oil barrel?

A. I gathered it from that and my previous knowledge of glue and of the workings of glue as I had seen hard glue worked. I came to the conclusion, though others had said it was not as good until it was dried, that the liquid glue was better, was stronger, and that if they could use sometimes cheap glue in an oil barrel they certainly could use good size in an oil barrel.

X Q. 402. Why didn't you get out a patent for gluing pieces of wood together with liquid glue?

A. Because it was not patentable, I thought.

91 X Q. 403. Why not?

A. Because I didn't think of it; I didn't think anything about a patent at that time.

X Q. 404. Why not?

A. Because I hadn't it in my mind; I knew nothing about patents at that time.

X Q. 405. Did you make an invention of discovering that you could glue pieces of wood together without reducing the glue to its hard state?

Objected to as entirely a question of law for the court.

A. I never thought of it in that light at all, not that point, not that I remember.

X Q. 406. Had you thought that you had made an invention when you had these talks with the officers of the defendant?

A. I thought that I had a valuable secret, a very valuable one.

X Q. 407. Had you thought you had made an invention?

A. I could not answer that question.

X Q. 408. Why not?

A. Well, I can't say whether my mind ran to a secret or to an invention; a secret is, I suppose, an invention in one's mind.

X Q. 409. Did you suppose you were the first person who had glued pieces of wood together with glue that had never been hardened?

A. I don't think I ever gave the question a thought.

X Q. 410. Don't you know as a matter of fact that before you glued these pieces of wood together other people had glued pieces of wood together with glue that had not been hardened?

A. I do not; no, sir.

X Q. 411. Have you ever seen it done in your uncle's works?

A. No, sir; I have not.

X Q. 412. Or any glue factory?

A. No, sir; it might have been done all the same; I don't deny it; but I had not seen it.

X Q. 413. Did you know at this time that paper manufacturers and others were in the habit of using in their business glue that had never been hardened?

A. I did; yes, sir.

92 X Q. 414. What kind of business had you known glue that had never been hardened used in?

A. Used in wall papers and writing papers.

X Q. 415. How used in wall paper?

A. Used to put the color on.

X Q. 416. Explain how it is done.

A. Well, they take their paints or their colors and mix them up with a solution of warm glue and that holds the color to the paper.

X Q. 417. Sticks the color to the paper?

A. Yes, sir.

X Q. 418. How else is it used in other papers?

A. In other papers they have a vat, a box rather, and the paper comes down through this box under a roller and out between two or three other rollers and the size is forced out of it, and what stays on the paper sizes the paper in combination with the alum or the rosin.

X Q. 419. This is used on writing papers, is it not, and printed papers?

A. Writing papers; yes, sir.

X Q. 420. The object of this is to coat the paper with a coating of glue, is it not?

A. Yes, sir.

X Q. 421. And this had been in use a long time before your experiments?

A. Before my day; yes, sir.

X Q. 422. And is not the object of this gluing or sizing of writing paper to prevent practically the ink from spreading in the paper?

A. Yes, sir; to harden the paper and prevent the ink from spreading and the alum is put in to make it insoluble.

X Q. 423. Before this time some of these paper manufacturers had been in the habit of making their own size from glue stock, had they not?

A. They had; yes, sir.

X Q. 424. And some had been in the habit of buying size from glue-makers, had they not?

A. Not that I know of.

X Q. 425. And some had been in the habit of making their
93 size by buying hard glue and reducing it to a liquid form by the addition of water, had they not?

A. They had; yes, sir.

X Q. 426. And all that before your discovery?

A. Before my discovery; yes, sir.

X Q. 427. Don't you know, Mr. Leggett, that at the time of your experiments of sticking pieces of wood together liquid glue or glue size had been used by other manufacturers in New York city and elsewhere for the purpose of sticking chair bottoms together and for the purpose of sticking the linings of silk hats to the inside of the hats and for other purposes for which glue is used?

A. I do not, sir.

X Q. 428. When you made these experiments of sticking pieces of wood together with glue size did you think they would fall apart?

A. I did not; no, sir.

X Q. 429. Why not?

A. Well, I thought the glue would hold. I thought it must be as good.

X Q. 430. Why?

A. From my impressions.

X Q. 431. How did you get such impressions?

A. From my testing the glue and talking it over.

X Q. 432. You never tested it before in that way?

A. I never tested it before in that way. I glued the first piece of wood; of course I had to make a commencement.

X Q. 433. When you glued a piece of wood did you expect it to fall apart?

A. No, sir; I don't think I did.

X Q. 434. Nothing in your past history would have made you think it would fall apart?

A. I did not think it would fall apart, but there was a good deal in my past history which made me think it would not be so good.

X Q. 435. What in your past history?

A. My talks with different glue manufacturers.

X Q. 436. Who had you talked with?

A. I had talked with Mr. Wiederholt—well, I can't tell the number of manufacturers I talked with.

94 X Q. 437. Did you not know and have you not known since these discoveries of yours any manufacturers who have been in the habit of buying glue size for the purpose of using it in sticking pieces of wood together?

A. Not to my knowledge, Mr. Beaman; not to my present memory.

X Q. 438. Why have they not adopted that plan?

A. Because they have to evaporate their glue; they have to have their glue much stronger to glue wood together, much denser, than they would for an oil barrel or paper or anything of that kind.

X Q. 439. To get more water out of it?

A. More water out of it, and therefore it is necessary to go through a drying process used in these cases.

X Q. 440. Any other reason why they used dried glue?

A. Not that I am aware of; not that I think of at the moment.

X Q. 441. Then this discovery of yours of sticking pieces of wood together has never come into any practical use?

A. Not that I know of; no, sir.

X Q. 442. You never got any patent on it?

A. No, sir; because it was not practical.

X Q. 443. Then the discoveries you made were not practical?

A. I did not say so, sir.

X Q. 444. You did say so just now. Why are they used if they are not practical?

A. Because with the present apparatus it is not practical to evaporate glue down thick enough for glue-work.

X Q. 445. Any other difficulty?

A. Yes; it would not keep as well, would not keep so long.

X Q. 446. Any other difficulty?

A. Well, I might find some if I thought over it half a day.

X Q. 447. You don't remember of any now, do you?

A. Not at present.

X Q. 448. You have thought over this thing a good deal?

A. I have given it some thought; of course I have.

X Q. 449. Why wouldn't it keep?

A. Well, you can keep hard glue an indefinite length of
95 time, but glue after it is melted you cannot unless you put something in it to keep it.

X Q. 450. Is there any object whatever in drying glue except to keep it and make it easily merchantable?

A. Yes, sir.

X Q. 451. What object?

A. The very object we are talking about—the keeping of it.

X Q. 452. Is there any other except for keeping it and making it easily merchantable?

A. Well, I just related a case now of liquid glue not being thick enough, and consequently hard glue is used.

X Q. 453. Well, we might evaporate it down thick enough, couldn't we?

A. Certainly; it is possible to be done.

X Q. 454. Is there any reason that you know of why liquid glue or size is not sold in the market for all purposes except that it is more convenient to buy it in the hard form and that it will keep better in the hard form?

A. In the first place, you would have to transport a much larger

bulk of water than you would in the dried glue, and these objections of keeping. The amount of water it contains would make it not so convenient to use as hard glue; otherwise I believe it to — better. I know it to be better.

X Q. 455. What to be better?

A. The liquid glue or glue soup, as you might term it.

X Q. 456. Then your opinion is, Mr. Leggett, if I understand you, that if a man wanted to get the best result from glue for any purpose and didn't care for the matter of expense he would never reduce his glue to hard glue?

A. Yes, sir; that is my idea. To my knowledge his glue would be better without being reduced to hard glue.

X Q. 457. Then the only reason why glue is reduced to hard glue is for economy's sake in transportation and for economy's sake in keeping, is it not?

A. Yes, sir; for convenience, and, besides, it is not everybody that wants to run a glue factory.

96 X Q. 458. Why don't everybody want to run a glue factory?

A. Because it is quite a business to manufacture glue of itself.

X Q. 459. But if anybody wanted to get the best results from glue you would advise him to run his own glue factory?

A. I would; yes, sir.

X Q. 460. Whatever purpose he wanted to use his glue for?

A. Yes, sir.

X Q. 461. Why is it best for a man to have his own glue factory?

A. Because he can get usually a more uniform quality of glue. Glue that has been reheated and gone through the drying process has deteriorated. In that way he gets the full strength of his glue.

X Q. 462. And if a man was gluing chair bottoms and wanted the best glue you would advise him to make his own glue?

A. If he could afford to use enough of it to pay him to make it; yes, sir.

X Q. 463. You would give the same advice to a man who was using glue for gluing picture frames, wouldn't you?

A. Yes, sir; I would. It would follow the same thing.

X Q. 464. Or gluing the inside of oil barrels?

A. Yes, sir.

X Q. 465. Or whiskey barrels?

A. Yes, sir.

X Q. 466. Or any other kinds of barrels?

A. Yes, sir; or any other kinds of barrels.

X Q. 467. If he was gluing staves of barrels together—making barrels without hoops—would you advise him to make his own glue?

A. The glue would be better; yes, sir.

X Q. 468. The glue would be better if he made his own glue?

A. Whatever priced glue he used—glue is worth from four cents to fifty cents a pound—and these questions you have given me are based upon the quality of stock he uses.

X Q. 469. He would get a better quality of glue for the same money if he had business enough to justify it?

A. To justify it; yes, sir.

97 X Q. 470. Are a good many manufacturers now in various kinds of business coming to make their own glue?

A. Not that I know of.

X Q. 471. Do you know any large furniture people making their own glue?

A. I don't know any one; no, sir.

X Q. 472. Do you know of any one but oil people and paper people that make their own glue?

A. I do not; no, sir; I cannot think of any one now.

X Q. 473. You speak of different qualities of glue. What makes different qualities of glue?

A. The different kinds of stock and the manner in which they are made. The stock is treated, whether made from the first boiling, second boiling, or third boiling.

X Q. 474. What is the best stock?

A. In our business we consider horn pitch the best stock.

X Q. 475. What is the poorest stock?

A. Fleshings in cattle are usually considered the poorest.

X Q. 476. Enumerate the various kinds of stock, beginning with the poorest and going up to what you call the best.

A. Well, there is fleshings and ordinary tanners' scraps, clear calves' pates, sheep stock, cattle pates, sinews, English hide cuttings, cattle heads, horn pitch. How many of these do you want, Mr. Beaman?

X Q. 477. I want all you can think of.

A. That is all I can think of at present.

X Q. 478. What are the various processes by which glue is made from these different materials?

A. Well, there is the acid process for treating bones—two acid processes that I know of—muriatic and phosporic acid processes for treating bones. For treating hide stock the lime process and the acid process.

X Q. 479. Is that all?

A. That is all I think of just now.

X Q. 480. What do these various acid processes and lime processes do to the stock?

98 A. In the hide stock it not only softens the hide but loosens the hair, opens the pores of the skin of the hide, makes it more porous, softer rather, eats out the hard substance, and leaves the gelatinous matter; breaks up the strings that holds the glue.

X Q. 481. Where is the glue?

A. It is in the pores; not in the pores, but in the pieces of hide, and when the pores are open it more readily dissolves.

X Q. 482. How do you dissolve it?

A. Do you want the process, sir?

X Q. 483. Yes.

A. After the hide pieces have been sufficiently limed, which takes

from thirty to ninety days usually, according to the quality of glue you wish to make, they are put into a washer and washed thoroughly, and the lime is taken out of them. It must be taken out of them or the glue would be spoiled. They are washed very clean—that is, good glue-makers would wash them clean—and then put into boilers and simmered for eight or ten hours, different rates of time according to the softness of the stock, and after they have boiled to the strength desired the soup is drawn off, then more water is added and another boiling is made in the same way, and sometimes a third boiling is made, which is also drawn off. The glue is then run, sometimes together and sometimes not.

X Q. 484. That is, the different drawings?

A. The different drawings. Sometimes they are evaporated to a lower state, lower amount of water, and then the glue is taken and run off into what we call coolers, where the glue is allowed to cool, and then it forms into a jelly. It is then cut into blocks and run through a machine of wires which cuts it into slices, and these slices are put on nets and there allowed to dry.

X Q. 485. And the result is the dried glue of commerce?

A. The result is the dried glue of commerce; yes, sir.

99 X Q. 486. The first, second, and third drawings produce glue of different qualities, do they not?

A. Different qualities; yes, sir.

X Q. 487. And the drying takes place by the natural heat of the sun, or artificial?

A. The drying qualities of the air, or artificial.

X Q. 488. And there is danger by glue-making, is there not, that before the jelly glue is dried it may spoil or deteriorate?

A. Yes, sir.

X Q. 489. And therefore you use great care in the drying?

A. It requires a great deal of care; a great deal of stock is damaged in drying; it is a very precarious process.

X Q. 490. What would be the effect if you should try to get out glue from these hide scraps, as you call them, without liming them or without treating them with acid?

A. Well, you would get a very inferior glue.

X Q. 491. Would it be inferior or would you get less glue?

A. It would be less and you would get very inferior glue, and it would take a larger amount of boiling, and in that way you would spoil your glue.

X Q. 492. You would get glue, wouldn't you?

A. Yes, sir.

X Q. 493. You could not get anything but glue, could you?

A. Well, you might get grease and that kind of stuff.

X Q. 494. But that would separate?

A. Yes; it would separate in the kettle and that would discolor the glue.

X Q. 495. And it would not be so merchantable?

A. It would lose its strength; the heat required would deteriorate its strength.

X Q. 496. And you would not get so much glue?

A. No, sir; you would not get so much glue.

X Q. 497. But wouldn't you get glue as a result?

A. Yes, sir.

X Q. 498. You have never made glue in that way?

100 A. No, sir; I never had any experience in that way.

X Q. 499. Don't you know that a good many manufacturers make glue without ever treating their scraps with lime or acid?

A. No; I do not; no, sir.

X Q. 500. Is the process of glue-making anything but getting from the raw materials the glue or gelatine which already exists therein by boiling and then drawing that gelatine off and allowing it to cool and harden?

A. Is there anything else?

X Q. 501. Is there anything else in it than that?

A. You would have to have knowledge and experience to get the best results.

X Q. 502. Is the making of liquid glue anything more in a general way than the cook does who makes soup from ordinary soup materials and gets glue from them while cooking?

A. Well, that is not the same thing.

X Q. 503. Explain what you mean.

A. Well, I mean that a cook is boiling a piece of meat and a glue-boiler is boiling glue stock. One is for glue and the other for meat.

X Q. 504. They both get glue, don't they?

A. They might possibly; if she is boiling a bone she might get glue, a very little, a trifle, but I hardly think it would be more than a trace.

X Q. 505. If she boiled what you call sheep pates in the same way she ordinarily boils her beef, she would get glue, wouldn't she, and nothing else?

A. She would get some glue, possibly; that goes back to the treatment of stock.

X Q. 506. She would get as much glue as you would, wouldn't she, from the same material?

A. No, sir; she would not, anything like it.

X Q. 507. And the reason she would not is because your treatment of these sheep pates by acid or lime would more completely free the glue?

A. Yes, sir.

101 X Q. 508. Is there anything else in glue-making but what the cook does in making her soup except preparing the stock so that the glue can more completely be extracted from it by boiling?

A. Yes, sir; you have got to have a full knowledge of how to boil it after you have prepared the stock; one of the most delicate operations is the boiling of the glue.

X Q. 509. Anything else?

A. Well, I can't think of anything else just now; there might possibly be.

X Q. 510. And from such experience as you have had, and time to reflect, you cannot think of anything else?

A. I cannot just now.

X Q. 511. Some cooks make much better soups than others, don't they, from the same stock?

A. Yes, sir.

X Q. 512. And some glue-makers make much better glue from the same stock, don't they?

A. Yes, sir.

X Q. 513. And substantially it is a matter of skill and experience?

A. It is skill and experience, yes, sir; it is best that anybody should have a full knowledge.

X Q. 514. The longer you make glue the more you know about it?

A. The less we know—that is, we think we know less about it?

X Q. 515. You have spoken about carrying around with you certain little things to make experiments with; what were they?

A. Simply an alcohol lamp and a little jacket kettle on top of it.

X Q. 516. An ordinary glue pot?

A. Yes, sir.

X Q. 517. And that is sufficient to make glue in?

A. Oh, plenty; yes, sir.

X Q. 518. Sufficient to test glue in?

A. Yes, sir.

X Q. 519. A man with an ordinary glue pot and alcohol lamp can make glue if he has the glue scraps, can he?

A. Certainly; he wants to take and cut them up in very small pieces and boil them, simmer them along, not too fast.

102 X Q. 520. And he will get glue?

A. Yes, sir.

X Q. 521. And when he has done that, in your judgment, he gets glue that is better for any purpose than hard glue?

A. Yes, sir—well, take the same stock.

X Q. 522. Take the same kind of stock?

A. Yes, sir.

X Q. 523. And if a man to-day wants to make glue for any purpose, in order to get the best quality I can get it is the best way for me to get a little glue pot and make my own glue?

A. That is my opinion. My opinion is, the less the glue is heated—the less it is dried—the better it is. The more you heat glue the more it deteriorates.

X Q. 524. Is that something you think you found out?

A. No; I don't know as I found it out specially. I suppose every glue-maker has found it out that knows anything about the making of glue.

X Q. 525. You think they had found it out before 1870?

A. Well, I have my doubts about that, because, as I said before, a good many of them thought glue had to be dried before it had its full quality.

X Q. 526. Do you think you are the first that found it?

A. I don't know that I am the first that had knowledge of it.

X Q. 527. You don't claim to be, do you?

A. I don't think I would make a claim before thinking over it some.

X Q. 528. Please think it over and let us know whether you claim to be the first person that discovered that the best glue was the glue that had been boiled the least and never been dried.

A. I do not think I made any claim to it, at present thought.

X Q. 529. And you do not know?

A. I don't say that I do at present. I don't know.

103 X Q. 530. You may hereafter make a claim to have discovered that heretofore.

A. I don't say anything about it now at all.

X Q. 531. How much would this little glue pot of yours hold that you made experiments with?

A. My recollection is that it would hold pretty nearly a pint or more.

X Q. 532. How many pieces of wood did you glue together?

A. That is something that I cannot possibly remember; I made so many experiments.

X Q. 533. Were your experiments to test the different qualities of glue or to determine whether glue that had never been hardened would stick pieces of wood together?

A. My experiments were made on that line, to stick wood together—the quality of the size.

X Q. 534. If I understand you, Mr. Leggett, while you were in the business as you were traveling about the country you were in the habit of buying glue stock?

A. I never bought much glue stock; no, sir.

X Q. 535. Did you buy hard glue?

A. Yes, sir.

X Q. 536. And you carried this little glue pot with you to test the glue?

A. Yes, sir.

X Q. 537. You tested it in that way?

A. With the jelly test; yes, sir.

X Q. 538. What is the jelly test?

A. Well, it is the amount of water the jelly will take.

X Q. 539. Explain.

A. Well, you take an ounce of glue and four or six ounces of water and melt the glue down, and the glue that produces the strongest jelly is usually the strongest glue.

X Q. 540. How much per cent. of water does the ordinary wood mechanic use in reducing hard glue to his liquid glue?

A. Well, that would depend somewhat upon the strength of the glue.

X Q. 541. Well, what are the proportions?

A. It would take from about two and a half pounds of water to a pound of glue—up to about three.

104 X Q. 542. Three parts of water?

A. Yes, sir.

X Q. 543. What percentage of water does the ordinary barrelman add to hard glue to reduce it to such consistency as he would use for putting it into barrels?

A. My remembrance is about one to four or five. It would be

used in different strengths in different weather, you know. In cold weather they would use it thinner and in warm weather thicker.

X Q. 544. That varies according to the weather and according to the character of the glue?

A. According to the character of the glue; yes, sir.

X Q. 545. What is the percentage of water that is evaporated ordinarily from the jelly glue as it goes on the dryers?

A. To make dried glue, sir?

X Q. 546. Yes; to make dried glue.

A. Well, our glue usually runs about eight pounds of water to one pound of glue.

X Q. 547. As you put it on the nets to dry?

A. About eight pounds of water to one pound of glue.

X Q. 548. And from nine pounds of jelly you would get one pound of hard glue?

A. Yes, sir; that is about the average.

X Q. 549. Is that the general average?

A. I don't say that it is, because some evaporate the glue down lower. We do not use any evaporater and we put it on the nets in that way.

X Q. 550. That is, if I understand you, Mr. Leggett, when you in your usual business begin to evaporate the jelly it is eight parts of water and one part of glue?

A. Yes, sir.

X Q. 551. And when you have finished the drying you have one part of glue and the eight parts of water have disappeared?

A. Most of it; there may be some left there.

X Q. 552. Whether there is some left or not out of the nine pounds of jelly, as I understand, you only get one pound of hard glue?

A. That is about what we calculate; yes, sir.

105 X Q. 553. Now, when the ordinary mechanic takes that one pound of hard glue and uses it in his business he adds to it from two and one-half to three pounds of water?

A. Yes, sir.

X Q. 554. And when the barrelman takes that for his business he adds to it four or five pounds of water?

A. Yes, sir.

X Q. 555. And when the man that makes size for his paper business takes that and adds water to it, how much does he add?

A. With hard glue they used to use sixteen pounds of water to one pound of glue and as high as twenty pounds.

X Q. 556. He reduces it much thinner, then?

A. Yes, sir.

X Q. 557. So that none of the people except the paper-maker ever reduces your glue so low for any purpose—never adds so much water to it as it has when you begin to dry it?

A. Never, I think, to be mentioned.

X Q. 558. Glue in the shape that you spread it on your nets or that you run it would have too much water in it to be used for lining barrels?

A. I think it would; yes, sir.

X Q. 559. How much longer would you need to evaporate it?

A. Well, I think we would have to bring it down to four or five pounds of water for each pound of hard glue.

X Q. 560. Have you got a copy of what you referred to in some of these letters which you have produced as the horn-pith patent?

A. I have; yes, sir.

X Q. 561. Have you got it here?

A. I think I have got it; I am pretty sure I have.

X Q. 562. Please look at the paper I now show you and state if that is a printed copy of such patent.

A. Yes, sir; that is a copy of it.

X Q. 563. This is a copy of the patent referred to in your letters to the Standard Oil Company, is it not?

A. One of the patents; yes, sir.

106 Paper offered in evidence marked Exhibit 1 of this date. Objected to as entirely irrelevant, and motion made to strike it from the record.

X Q. 564. In your letter marked D of February 6, 1874, you said, "I believe that bone patent in making 300 tons of glue a year will save alone at least $75,000 per year." Is the patent I just offered in evidence the patent to which you referred in your letter?

A. It is; yes, sir.

X Q. 565. Have you ever licensed anybody under that patent?

A. I don't own the patent.

X Q. 566. Didn't you own any of it?

A. I owned the control of it at that time in the State of Ohio.

X Q. 567. Have you sold your interest in it?

A. Have I sold my interest in it? Yes, sir.

X Q. 568. Don't you use it yourself?

A. The company uses it.

X Q. 569. What company?

A. The Elizabethport glue works.

X Q. 570. Are you a member of that company?

A. I am not; no, sir.

X Q. 571. Have you any interest in it?

A. I have a very slight interest in it.

X Q. 572. Did you at that time really believe that the use of that bone patent would save the Standard Oil Company $75,000 a year?

A. I did; yes, sir.

X Q. 573. Is that one of the things you talked to them about when you were telling them about your secret?

A. I offered them this process.

X Q. 574. That is, in this bone patent?

A. Yes, sir.

X Q. 575. You have spoken about your poverty at this time. What compensation had you been receiving prior to 1874?

A. I had $1,500 per year and ten per cent. of the profits of the business.

X Q. 576. What compensation did you receive in 1874?

107 A. Well, during 1874 I received, I think, about—I couldn't exactly say, but it was inside of $2,000.

X Q. 577. Well, the next year?

A. Well, I think I got only $1,500 the next year.

X Q. 578. 1876?

A. That is, I had an interest in the business at that time, but that was all I was allowed to draw.

X Q. 579. How much did you get out of the interest in the business these years, 1875 and 1876?

A. I didn't get anything out — it.

X Q. 580. 1877?

A. I think the company failed in 1877. I think I lost all my interest.

X Q. 581. 1878?

A. I think I got $1,500 then, if I remember right.

X Q. 582. 1879?

A. I think it was about the same, $1,500.

X Q. 583. 1880?

A. My impression is I got somewhere between $1,500 and $2,000; I can't say which.

X Q. 584. And so on up to the present time?

A. Yes, sir; substantially. Since 1874 my income has been from $1,500 to $2,000 per year until the last year or two.

Plaintiff's counsel gives notice to defendant's counsel to produce at the next hearing the originals of letters marked for identification at the last hearing, or in default thereof copies of the same will be introduced and parol evidence of their contents taken.

Further cross-examination postponed until Thursday, February 23, 1888, at half past eleven o'clock.

FEBRUARY 23, 1888.

Adjourned to Wednesday, February 29, 1888, at half past eleven o'clock.

108 NEW YORK, *February* 29, 1888.

Met pursuant to adjournment.

Present: Counsel as before.

Cross-examination of EDWARD W. LEGGETT resumed by Mr. BEAMAN:

X Q. 585. Have you read your testimony already given in this case?

A. I have, sir.

X Q. 586. Do you desire to make any changes in it?

A. No, sir.

X Q. 587. You stated in your direct examination, in substance, that you thought that it was foolish for The Standard Oil Company, the defendants, to buy their own glue, which they were to use in barrels. Why did you think it was foolish for them to buy their glue?

A. To buy their own glue?

X Q. 588. Yes.

A. You don't mean to buy their own glue, but to buy glue, don't you?

X Q. 589. Well, to buy glue.

A. Because it would cost them a good deal more money to buy glue than it would to make it.

X Q. 590. Do you think it would have been foolish for them to have bought their glue rather than to make it and dry it?

A. Yes, sir; I think it would.

X Q. 591. Why?

A. Because they could make it cheaper, even by drying it. They would save the profit on it of the glue manufacturer.

X Q. 592. Anybody would know that, wouldn't they, that if they used glue enough to justify the establishment of a factory it would be better to make it themselves than to buy it?

A. It would be cheaper; yes, sir.

X Q. 593. You don't claim that that was an invention of yours?

A. I do not; no, sir.

X Q. 594. What amount of glue do you think an oil refiner would need to use in order to justify him in making his own glue?

A. And drying it?

109 X Q. 595. And drying it; yes.

A. That would be a pretty hard thing to answer without thinking it over considerably.

X Q. 596. Well, think over it and give us your judgment about it.

A. The thing is so different now from what it was then—do you mean at that time?

X Q. 597. Well, state it at that time and at the present time.

A. Well, I should think at that time if a man used a thousand pounds of glue a day it would pay him to make it.

X Q. 598. Even if he dried it?

A. Yes; if he understood the business.

X Q. 599. Or could hire a man that could make glue?

A. Or could hire a man that understood it. Now I think he would have to make considerable glue to make it profitable for him—a great deal larger amount to make it profitable to him.

X Q. 600. Well, how much?

A. Well, I should say a couple of tons a day—4,000 pounds.

X Q. 601. If I understand you, a refiner at that time wanting to use glue for barrels, if he used, say, a thousand pounds, it would be better for him to make it himself rather than buy it?

A. Yes, sir; I think it would.

X Q. 602. And to-day it would not be best for him to make his own glue unless he was using 4,000 pounds a day?

A. Anywhere from three to four thousand pounds. The more you make the cheaper you can make it.

X Q. 603. And the saving on a thousand pounds a day at that time would have justified putting up a glue plant?

A. I think it would.

X Q. 604. To-day the saving on a thousand pounds would not, but on 4,000 pounds would?

A. Yes, sir.

X Q. 605. Has the cost of glue—the price of glue—changed very considerably since then?

A. Very considerably; yes, sir.

110 X Q. 606. What has been the change, speaking generally?

A. The price is very much lower.

X Q. 607. Is the price to-day within fifty per cent. of what it was then?

A. Yes, sir; glue worth then 22 or 23 cents a pound is worth to-day about 12 cents a pound.

X Q. 608. The same quality?

A. The same quality; yes, sir.

X Q. 609. What is the occasion of this difference in price?

A. Well, I suppose over-production and importation of foreign glues.

X Q. 610. And the cheapening of raw materials?

A. The cheapening of raw materials; yes, sir.

X Q. 611. You can make glue cheaper than you could at that time?

A. Yes, sir.

X Q. 612. So you can make on selling glue at 12 cents a pound——

A. The profit is very close to-day.

X Q. 613. Such glue as is sold to-day at 12 cents a pound, what is the profit on that per pound?

A. It would be a very difficult thing to answer.

X Q. 614. Is it one cent per pound?

A. It would be a pretty difficult thing to answer.

X Q. 615. Is it as much as two cents per pound?

A. I should say not; no, sir.

X Q. 616. What was the profit when the manufacturers were selling the same quality of glue at 22 cents a pound?

A. I think the profit at that time on dried glue was in the neighborhood of seven cents per pound; possibly more in some cases.

X Q. 617. So that not only the price has diminished, but the profit has also diminished?

A. Yes, sir; the profit has diminished.

X Q. 618. Would you not think that it was a wise thing for any one who was using at that time a thousand pounds of glue a day in his business, whether it was refining business or any other business, to make his own glue?

111 A. The same thing would apply, I think, with anybody that used a thousand pounds of glue.

X Q. 619. Whatever business he was using it for?

A. Yes, sir.

X Q. 620. So that the question of making one's own glue is not at all dependent upon the purpose for which it is to be used if he has to use enough of it to justify the making of a plant?

A. I should say not; no, sir.

X Q. 621. Mr. Leggett, how much did it cost in 1873 per pound

to dry glue? I mean by that what part of the cost of a pound of glue consisted in the cost of drying it?

A. Well, that is another difficult question to answer. You can't always say, because sometimes glue is dried very much quicker than at others.

X Q. 622. Give the best information you can on the average.

A. I should say it cost three cents a pound to dry glue on the average.

X Q. 623. At that time?

A. Yes, sir.

X Q. 624. How much now?

A. Well, I don't think you could dry it at much less now. I should consider in our factory three cents a pound a low estimate for drying glue.

X Q. 625. That is, if I understand you, the expense of a pound of dried glue in your factory consists of three cents for having dried it after you have got it in the jelly state?

A. I think it would average that easily.

X Q. 626. That is, it costs three cents a pound to reduce the glue from this jelly form to the dried form?

A. Yes, sir.

X Q. 627. What percentage of water did you say there was in what you may call liquid glue, such as you begin to dry in your factory?

A. Eight parts of water to one part of glue usually.

X Q. 628. Eight pounds of liquid glue or jelly will make one pound of dried glue?

A. Yes, sir; it don't run quite that always; sometimes about seven pounds.

112 X Q. 629. It costs three cents to get that seven pounds of water out of the dried glue?

A. Out of the glue; yes, sir.

X Q. 630. Whether by artificial heat or dried by air?

A. Yes, sir; possibly a little less by air, but about that on an average.

X Q. 631. Now, do glue-makers generally begin to dry their glue at the same point—that is, containing the same amount of water?

A. Oh, no; that varies, sir.

X Q. 632. How much?

A. Some evaporate it down very much lower, you know; some possibly evaporate it down one to four pounds of water.

X Q. 633. So that there will be four pounds of water to one pound of glue?

A. Yes, sir.

X Q. 634. Do you know any manufacturers that evaporate it so low as that?

A. Well, I think Armour does so, and the Brighton glue works; they do so, I think.

X Q. 635. Anybody else?

A. I think F. F. Lane & Company, of Newark, probably do.

X Q. 636. How do the majority of glue-makers evaporate it down? How low?

A. Well, I should say one to five; five pounds of water to one pound of glue. I should say that would be the average.

X Q. 637. Do some leave more water than you do?

A. I think not; I think we are about as high as anybody. We have very strong glue. I think we leave in a little more water usually than other people in making thin glues; they would probably leave more water in white glues.

X Q. 638. That is, if you want to make the very best glue, as I understand it, you leave more water in?

A. No; I don't say that. If you want a thin, transparent glue they do not boil it down, because it takes the color off it, you know, and they want it as clear as possible.

X Q. 639. The more you evaporate it down the more you turn the color?

A. Yes, sir; you are liable to.

113 X Q. 640. And the more you are in danger of damaging it?

A. Yes, sir.

X Q. 641. Because you are liable to overheat it?

A. Yes, sir; overheat it and burn it.

X Q. 642. And therefore you have fixed upon your basis as to the question of weight as the best practical basis?

A. In our own business; yes, sir.

X Q. 643. How long have you been carrying on drying glue on that plan?

A. We have been drying glue, I guess, for about ten years.

X Q. 644. Did not your uncles used to do it before you?

A. They were not in the glue-manufacturing business; they were not manufacturers of glue.

X Q. 645. They were not manufacturers; they were dealers?

A. Dealers; yes, sir.

X Q. 646. You have stated the amount of water that was in glue that was used in ordinary purposes for gluing wood together. If I remember your testimony you stated that that contained about two parts of water?

A. Two and a half to three parts of water to one part of glue.

X Q. 647. That is lower than glue-makers ever reduce their glue before drying?

A. I think so; it is a pretty difficult matter to reduce it down as low as that.

X Q. 648. What did you state was the proportion of water in glue for size for paper-makers' uses?

A. The average, I suppose?

X Q. 649. Yes; on the average.

A. Well, about one pound of glue to fifteen parts of water is about the average.

X Q. 650. What is the average when it is used for lining the inside of oil barrels?

A. I think it is one in five—about that—or one in four the usual run.

X Q. 651. What percentage did you use in your experiments in your work at Pittsburg?

A. In an oil barrel—I guess I got that a little wrong—one to five or one to seven, according to the season.

114 X Q. 652. Have you ever tested it to see?

A. Yes, sir; I have.

X Q. 653. Well, what did you use in Pittsburg?

A. About one part of glue to about five parts of water. We usually averaged about one in five.

X Q. 654. Had you ever at that time made any glue yourself?

A. At that time?

X Q. 655. Yes.

A. Only experimentally until I made it at the Central Oil Refining Company.

X Q. 656. At the time you made this invention you had never made glue practically?

A. Only experimentally. I had tried it. You may say it was practical, too.

X Q. 657. You never had dried glue, had you?

A. I had, frequently.

X Q. 658. You never made any glue except in this little pot that you had?

A. Yes, sir; but I had dried pieces to see how they came out, only in an experimental way.

X Q. 659. You had never run a glue factory?

A. No, sir.

X Q. 660. All you had done about these experimental matters was to act as agent for your uncle?

A. I had acted as agent and talked glue and experimented with glue for nine years.

X Q. 662. But you never had made ten pounds of glue in your life, had you?

A. I never had, but had seen a good many pounds made in factories.

X Q. 663. And you think you understood the manufacture of glue?

A. Yes, sir; because the first time I boiled it I made a perfect success of it at the Central Company. I don't believe I went around for nine years in the glue business and did not learn something about glue.

X Q. 664. Did you at that time know what percentage of water there was in ordinary glue, at the time you took out your patent, as it was ordinarily dried or before the drying process began?

A. Yes, sir.

115 X Q. 665. Did you know what percentage of water there was in glue as it was ordinarily used by refiners to line the inside of barrels?

A. I did; yes, sir.

X Q. 666. How had you learned these facts?

A. Visiting refineries and selling them glue. Sometimes we had complaints of the glue. It did not act right; go to the refinery, and they would open a barrel for you and show it to you.

X Q. 667. What is the object of lining oil barrels with glue?

A. To prevent the oil from going through the wood.

X Q. 668. Is it intended for the purpose of making the wood stick together?

A. Simply to fill up the pores of the wood and keep oil from working through.

X Q. 669. How does it soak into the pores of the wood?

A. Well, it is driven in by the steam, in a measure.

X Q. 670. Anything else drive it in?

A. No; only its solubility. It naturally soaks into the wood.

X Q. 671. You don't mean that it is soluble; you mean that it soaks into the wood.

A. Well, it soaks in.

X Q. 672. It don't dissolve?

A. No; it is dissolved.

X Q. 673. It goes into the wood the same as water would or vinegar or any other liquid?

A. No; it would not be as limpid. It would not penetrate as far as water.

X Q. 674. More like molasses?

A. Well, not so thick.

X Q. 675. Does the steam help to penetrate and drive it in?

A. Certainly; helps to force it.

X Q. 676. That steam was in the old process as well as yours, wasn't it?

A. Yes, sir.

X Q. 677. There is nothing new in your process to make it penetrate the wood?

116 A. Yes, sir; I think there is. Glue made by my process is more limpid.

X Q. 678. Do you mean there is more water in it?

A. It is thinner, of a thinner consistency.

X Q. 679. Do you mean there is more water in it?

A. I don't mean that. I mean with the same amount of water in it. I just answered that question.

X Q. 680. Is there any more water in it?

A. I said no.

X Q. 681. Is there any more glue in it?

A. I said no.

X Q. 682. Is there any more of anything in it, or less of anything in it?

A. I said it was more limpid, thinner, blended with the water more—was more perfectly mixed with the water.

X Q. 683. Do you mean to say that there is any more of anything in it?

A. I think there is more strength in it.

X Q. 684. Do you mean to say that there is any more glue in it or water in it?

A. I don't mean to say that there is any more glue in it or any more water in it, pound for pound, of the same character of glue, but I say that there is more strength in it—that is, the glue would be stronger; the size would be stronger than the dried glue.

X Q. 685. You mean, as you said the other day, that two pieces of wood stuck together with it would stick closer than they would if it had been dried?

A. Yes; that is what I mean.

X Q. 686. That is all you mean?

A. I mean just what I have stated.

X Q. 687. Do you mean anything more than that?

A. Well, I don't know what you are driving at myself.

X Q. 688. I want to know what you mean.

A. If you want to try to mix me up on it—I have given it just as straight as I could. It is more limpid; will penetrate the pores deeper than the dried glue. Do you get my idea now?

117 X Q. 689. I get the idea that you think it would penetrate the pores deeper than dried glue, because it is more assimilated with the water than glue remelted would be?

A. Yes, sir.

X Q. 690. Have you tried any experiments of that kind?

A. Yes, sir; I have tried lots of experiments.

X Q. 691. Does glue hold together on pieces of wood because the glue penetrates into the wood or because the wood itself is stronger?

A. Both ways.

X Q. 692. Can't you glue together two pieces of glass?

A. You can, but they are not liable to stick; they are liable to crack off at any time.

X Q. 693. The harder the substance you glue together the more difficult it is to hold together?

A. Yes, sir; for any length of time.

X Q. 694. The weaker the glue is the less they will hold together?

A. Yes, sir.

X Q. 695. Now, the object of gluing oil barrels is not to hold the pieces of wood together, is it?

A. It is not; no, sir.

X Q. 696. Have you any knowledge, Mr. Leggett, as to whether or not glue was ever used before it was dried?

A. Ever used before it was dried?

X Q. 697. Yes.

A. When do you mean, what time?

X Q. 698. By the man who first found out that glue was good for sticking things together.

A. I have no knowledge of it; no, sir.

X Q. 699. Do you suppose that the man who first found out that glue was good for sticking things together dried it before he used it?

A. I think he did; I think in all probability he did.

X Q. 700. Why did he dry it?

A. Well, he might have dried it to keep it.

X Q. 701. What did he want to keep it for?

A. Well, to use on some future occasion.

X Q. 702. Use for what?

A. On anything; furniture or anything he might want to glue.

118 X Q. 703. How would he have found out that it was good for gluing furniture?

A. Well, I am sure I will have to give that up. I don't see what these questions lead to, anyhow. I don't know; that is all there is about it.

X Q. 704. Isn't glue dried for substantially the same purpose that fish are dried and apples are dried, namely, to keep them?

A. Yes, sir.

X Q. 705. Is it dried for any other purpose than they are dried for?

A. Not that I know of; no, sir.

X Q. 706. No other purpose than they are dried for?

A. Oh, I don't know.

X Q. 707. Well, do you know of any other?

A. Do I know of any other purpose? Well, it used to be considered years ago that glue was not as good in its soup condition as it was when dried; that it went through some chemical change. I think since I brought this soup question up that they have changed their minds very materially on that subject.

X Q. 708. I ask the question if glue has ever been dried for any other purpose that you know of except for the same purpose that codfish are dried and apples are dried.

A. I don't know of any just now.

X Q. 709. Do you think that there is any more invention in using glue before it has been dried for sticking pieces of wood together than there is in making an apple pie before the apples have been dried or in making codfish chowder before the codfish has been dried?

A. I think it was at that time, before 1873, because I didn't know of anybody using glue soup to stick wood together. It might have been done without my knowledge.

X Q. 710. Did you think you were the first man that ever stuck wood together with liquid glue?

Objected to as irrelevant.

119 A. I don't know as I thought anything about it, but I had no knowledge at that time of anybody else doing it.

X Q. 711. That is all the invention you made, that you can stick wood together with liquid glue that had never been dried?

Objected to on the ground that his patent states what his discovery was.

A. Oh, I experimented with it on wood, and how it would work on paper—how it would act in various ways—and found that glue was more elastic before it was dried; not so liable to crack.

X Q. 712. Did you do anything, Mr. Leggett, excepting to find out that you could stick pieces of wood together with glue that had not been dried, and then by reason of that to come to the conclu-

sion that you could also glue the inside of barrels with glue that had never been hardened or dried?

A. Oh, I poured it on paper and saw how it acted on paper, and saw how elastic it was. I could not think how many tests I have made. My mind was made up that it was fully as good—better than the old process.

X Q. 713. You made up your mind that glue for any purpose was just as good or better if it had never been dried, did you not?

A. That is what I made up my mind to; yes, sir.

X Q. 714. That was the result of your experiments?

A. That was the result.

X Q. 715. You never had experimented at that time with any oil barrels at all?

A. I had not with that glue.

X Q. 716. Not with glue?

A. Not with soup glue; but I had seen them glued time and time again, using our glue. I would go to see how the glue would work. The barrels would sometimes be opened for me.

120 X Q. 717. How many pounds of glue do you think to-day it would be—suppose there was an oil refinery to-day using a certain amount of glue to glue barrels, under what circumstances do you think it would be best for it to make its own glue and not dry it?

A. Under what circumstances?

X Q. 718. Yes.

A. How much glue they were going to use?

X Q. 719. Yes.

A. And not dry it?

X Q. 720. And not dry it.

A. Oh, most any amount. It could be made cheaper—the same quality of glue.

X Q. 721. Explain what you mean.

A. Well, say from 500 to 5,000 pounds.

X Q. 722. If they were using only 500 pounds you think they had better make their own glue?

A. Well, I will say 1,000 pounds and upwards.

X Q. 723. In making a thousand pounds a day how much would they save, a thousand pounds of dried glue?

A. Well, they ought to save at least three cents a pound on it, the quality of the glue being equal. They ought to save the entire cost of drying the glue.

X Q. 724. How many pounds of dried glue does it take to line one oil barrel?

A. That depends upon the weather; some use more and some less.

X Q. 725. On an average?

A. Well, I suppose the highest point would be one to about five.

X Q. 726. One what?

A. Five barrels to a pound of ordinary glue would be a high point.

X Q. 727. Five barrels to a pound of dried glue?

A. Yes, sir.

X Q. 728. That would be a large allowance?

A. Not a large allowance, but that would be a large allowance of barrels for a pound of glue.

X Q. 729. It would run two to five barrels for a pound of hard glue?

A. Yes; I don't suppose they hardly ever use above five.

X Q. 730. Do you know of any users of glue, besides re-
121 finers and paper-makers, who are now making their own glue?

A. Not to my knowledge.

X Q. 731. Are you selling size or glue soup to any persons who use glue in their business, except to refiners and paper-makers?

A. I am not; no, sir.

X Q. 732. Have you ever done so?

A. Wall-paper men; that is all that I remember.

X Q. 733. Have you ever known of any persons who use glue for the ordinary purposes of sticking substances together to make their own glue?

A. I have not; no, sir.

X Q. 734. Have you ever known such persons in their regular business to stick things together except with glue that had been hardened and then reduced to a liquid form?

Plaintiff's counsel objects to this line of examination on the ground that it is not cross-examination, and states that the defendant's counsel has made the witness his own in respect to such matters as are not properly cross-examination.

A. No, sir.

Redirect examination by Mr. REED:

Q. 115. Mr. Leggett, what was your discovery?

A. The distinguishing feature of my discovery was the superior integrity of a lining made by the use of soup glue. By its limpid character it is more freely absorbed by the wood and more penetrating than glue dried and then remelted. It being more penetrating, it enters the pores of the wood deeper than dried glue, and not only enters the pores, but upon the surface presents a stronger covering of glue to the action of the oil, and, being more elastic than the ordinary glue and more penetrating, it is not so liable to crack when the barrel is handled, thus making in all a stronger lining.

122 Q. 116. Then its superiority consisted in the features that you have given in your answer?

A. Yes, sir.

Q. 117. Practically, what did it save?

A. It saved, at the time it was presented at the Standard, from ten to twelve cents a pound on the manufactured cost of the glue; they would save that by manufacturing their own glue.

Objected to.

Q. 118. Well, did it not also save the cost of manufacturing and drying the glue?

A. Well, I put that in before.

Q. 119. What did it save?

A. If they manufactured their own glue, leaving out the drying process and using the soup glue, they would save from ten to twelve cents a pound over what the dried glue cost at that time.

Q. 120. Besides being better, as you stated?

A. Besides being better and stronger glue.

Q. 121. And made a better lining?

A. And made a better lining.

Q. 122. Was this the process you described in your patent?

A. It was; yes, sir.

Q. 123. Before your discovery did you know of any refiners—oil-refiners—using soup glue?

A. I did not; no, sir.

Q. 124. What did they think of your discovery? And so state.

Objected to as incompetent.

A. The Central oil refinery of Pittsburgh—I visited them and R. J. Waring and R. J. Brown & Co., I think.

Q. 125. Well, go on and give what they said.

A. They would not believe it would work; they doubted it would work; in fact, all of them that I talked to for a long time; I had very hard work to convince them that it would work.

Q. 126. Did the officers of the Standard Oil Company at the
123 time you mentioned this to them at Cleveland also doubt that it would work?

Objected to as incompetent.

A. Yes; they also doubted it; yes, sir.

Q 127. And so stated to you?

A. And so stated to me.

Q. 128. You stated that Col. Oliver H. Payne was an officer of the company; at your interview with him in September, when he was present with the rest of the officers, what was his office?

A. He was known as secretary of the company.

Q. 129. Secretary of the Standard Oil Company at that time?

A. Secretary of the Standard Oil Company of Ohio; yes, sir.

Q. 130. Now, you also stated, sir, that when you told him you would sue him if he used your process that he replied: "Sue as soon as you please; we employ our lawyers by the year." That was what he stated to you, was it, sir?

A. Yes.

Q. 131. Now, what was his manner when he stated that to you?

A. Disagreeable and sneering and consequential; that is his style usually.

Q. 132. Did you ever see or know the firm of Leggett & Brother, who were your lawyers, when you obtained your patent, before you went to Washington? Did you ever see them?

A. I did not; no, sir.

X Q. 745. Anybody else?

A. Not that I think of just now; they may have done so.

X Q. 746. Anybody else that you knew of?

A. Not that I knew of; I have not made any special inquiries about it.

X Q. 747. How long were you with Holdship & Irwin?

A. I think about six months, if I remember right; five or six months.

X Q. 748. You went there and introduced it to them without any agreement that they should pay for it?

A. They were to pay a half a cent a pound, or half the profit, or saving for them.

X Q. 749. How long was your contract for?

A. I did not have anything but a verbal contract.

X Q. 750. Why did you leave them?

A. Because I went back to New York.

X Q. 751. Why?

A. Because I was called there from my position that I had in Pittsburg.

127 X Q. 752. Why; did you get a better place?

A. No, sir; I did not; but I was not making enough to support myself and wife at that time, so I returned to New York.

X Q. 753. But you got what you called a better position?

A. No, sir; I did not at that time.

X Q. 754. Why did you leave?

A. Because they withdrew their agency. I was their agent, and with both of them I could live very well, but with the loss of this agency I could not.

X Q. 755. What was this business, this agency?

A. Angell & Blake Steam Heating Company.

X Q. 756. You were agent for some New York party and also had this arrangement with Holdship & Irwin?

A. Yes, sir.

X Q. 757. And when the agency was withdrawn you gave up the Holdship & Irwin agreement?

A. Yes, sir.

X Q. 758. In the Holdship & Irwin agreement how much time did you devote to their business?

A. Well, I was there every day, I think; I had a man there; employed him to run it.

X Q. 759. And you paid that man out of your own money?

A. Out of my pocket; yes, sir.

X Q. 760. Did they continue it after you went away?

A. They did; yes, sir; so I am told.

X Q. 761. Did you make any demand upon them for the use of your process?

A. Yes, sir.

X Q. 762. But they paid you nothing?

A. No, sir.

X Q. 763. You never sued them?

A. I did not; no, sir; because I guaranteed to protect them

against the Standard Oil Company; I thought the patent might hold, you know.

X Q. 764. Was this agreement with Holdship & Irwin in writing?

A. No, sir; I think not.

X Q. 765. You have spoken about gluing a few barrels for somebody else in Pittsburg in September, 1874, if I remember; who were they?

128 A. I think you refer to the Central Oil Refining Company. I said some time in April, I think, that I glued at the Central Oil Refining Company. They would not believe that it would work and I bought stock and went up there and manufactered the glue for the Central Oil Refining Company.

By Mr. REED:

X Q. 766. It was in April, wasn't it?

A. Yes, sir.

By Mr. BEAMAN:

X Q. 767. These were the first you ever glued?

A. Yes, sir; the first I had glued.

X Q. 768. Did you ever glue any more for them?

A. No, sir; I did not.

X Q. 769. Did you make any contract with them whatever?

A. No, sir; I did not.

X Q. 770. Did they ever glue any barrels by your process afterwards?

A. They may have done so.

X Q. 771. Not to your knowledge, did they?

A. I don't know anything about them—no, sir.

X Q. 772. You don't know that they ever did?

A. I don't know that they ever did, and I don't know that they did not.

X Q. 773. You never heard that they did, did you?

A. I don't remember that I did. I don't remember that.

X Q. 774. As you understand your discovery, would a man use your discovery if he made his own glue and dried it and then glued barrels with it?

A. I think I said in my testimony the other day he would not.

X Q. 775. Do you still adhere to that view?

A. I do; yes, sir.

X Q. 776. If one glue manufacturer made glue soup and sold it to a refiner and then glued barrels with it, would either of these men infringe your patent as you understand it?

A. I should say so; yes, sir.

129 X Q. 777. Which one of them?

Objected to as a question for the court and as a leading question.

A. I think the oil-refiner would.

X Q. 778. Would the man who made the glue soup?

A. Well, it would be a legal question, I think. I would not like to decide it myself just now.

X Q. 779. You don't pretend that you were the first man that made glue soup?

A. Oh, no; I have not pretended that I was; we all know——

X Q. 780. Or the first man that sold glue soup?

Plaintiff's counsel objects to the line of inquiry on the ground that it has all been gone over and is irrelevant and incompetent and does not contain the line of cross-examination, and renews the objections made by the counsel before that he makes him his own witness when he continues it.

A. No, sir.

By Mr. REED:

X Q. 781. When you say you are not the first man who ever made glue soup you don't mean to say you are not the first man that applied this to oil barrels, do you, the first man that made glue soup applicable for oil barrels?

A. I don't mean to say—he said I was not the first man that made glue soup. Of course every glue manufacturer has made glue soup.

X Q. 782. But you are the very first man that ever applied it to the use stated in your patent as applicable to lining oil barrels with glue?

A. Yes, sir.

By Mr. BEAMAN:

130 X Q. 783. But you never had so applied it before you took out your patent or before you took out your reissued patent?

A. I had not; no, sir.

By Mr. REED:

Q. 784. Mr. Leggett, you stated that you had not made any experiments with oil barrels, but you had seen oil barrels lined with glue for many years, had you not, before you got your patent out?

A. Yes, sir.

Q. 785. And by applying it, as you did to wood, you saw that it was more limpid and what effect it would have upon wood?

A. Yes, sir.

Q. 786. And it was in that way that you made the discovery you did?

A. Yes, sir; I believed it would be better for oil barrels. I knew it would be better.

EDWARD W. LEGGETT.

Plaintiff's counsel offers in evidence the letters which have been already marked as exhibits in the case A, B, C, and D.

Plaintiff's counsel gives notice to the defendant's counsel that he must finish his defense in this case in accordance with the order of the court made on the 24th day of February, 1888.

EXHIBIT A OF FEBRUARY 14, 1888. R. N. I.

Weddell house, Ransom A. Gillette, proprietor.

CLEVELAND, O., *Jan. 10th*, 1874.

Standard Oil Company,

GENTLEMEN: Allow me to make you the following offer in the glue business:

I agree to sell you one-half interest in patent No. 143,770
131 for glue-lined barrels in the U. S., and one-half interest in patent No. 114,602 for making glue from bone in the State of Ohio; also my services to manage the manufacture of glue for your works or market. You, on your part, agree to furnish land, to build works, and the necessary amount to do so, say $25,000. You also agree to furnish the necessary credit or capital to buy stock and pay expenses. You are to average the cost of your glue for the past three years and the cost of manufacturing it yourselves, and I am to receive one-quarter of the net profits. I am also to be allowed to draw $5,000 per year to be charged to my account.

Yours truly, EDWARD W. LEGGETT.

EXHIBIT B, FEBRUARY 14, 1888. R. N. I.

Weddell house, Ransom A. Gillette, proprietor.

CLEVELAND, O., *January 12th*, 1874.

Standard Oil Company,

GENTLEMEN: I should be pleased to come to some kind of terms with you, but it seems to me you want all the goose and sauce too. I should be happy to consider an offer from you. You always desire your customers to make offers, and I have made mine. You certainly can afford to be liberal as the saving to the S. O. C. is immense.

In considering my proposition I wish you to remember the following fact in our agreement when this glue matter was taken up first. You gave me the word of honor of the Standard Oil Company and the individual honor of yourselves as gentlemen
132 (J. D. Rockefeller, H. M. Flagler and Col. Payne) that you would not use the information I gave you about making glue as I suggested in manufacturing unless with my consent. You now not only decline my offer, but tell me you do so because you can make better terms elsewhere.

From the obligation given to me on the opening of the negotiations and your frequent assurance since that I was dealing with honorable gentlemen, I claim you have no legal or moral right to use the information I imparted to you in any manner, shape or form without my consent.

I don't ask for more than justice in this matter, and I think it

will save us both time and money to continue our connection. I remain, awaiting your answer,

Very truly yours, E. W. LEGGETT.

EXHIBIT C, FEBRUARY 14, 1888.

Standard Oil Company, 1, 2, 3 & 4 Cushing block, Cleveland, O., and 140 Pearl street, New York.

GENERAL OFFICE, CLEVELAND, O., *Feb. 5th*, 1874.

Mr. Leggett,

DEAR SIR: I am not at liberty to give you the information you ask for.

Yours, O. H. PAYNE.

133 EXHIBIT D, FEBRUARY 14, 1888.

Weddell house, Ransom A. Gillette, proprietor.

CLEVELAND, O., *Feb. 6th*, 1874.

Standard Oil Company,

GENTLEMEN: Thanks for your kindness in answering my note of the 4th inst. I did not expect you would give me the desired information. Allow me to inform you that if one or two refiners have tried to use glue in nearly the same manner as my process calls for, it would not effect the validity of my claim on you not to use it, or of my patent.

It is strange to me that you gentlemen would question my claim, as I have your word of honor as gentlemen, often repeated, that you would not use the information I gave you in the process of manufacturing glue without my consent. Should any one five minutes afterwards tell you in substance the same as I did, it is not information new to you, and you are bound still to me as the first who imparted valuable information to you. Hence I claim you have no legal or moral right to use my process. You stated to me the saving does not warrant the investment. I believe that bone patent in making 300 tons of glue a year will save alone at least $75,000 per year, and I will agree to furnish all the capital required to build and run glue works, for one-half the saving over former average cost to you of glue. It seems to me to be your intention to employ some one at a cheaper rate than I offer, and to ignore my rights in the matter. I trust not, however, for in that event I shall have to dispose of my patents to established glue manufacturers who want them, and have the means to take care of them.

I remain, very, respectfully, EDW. W. LEGGETT.

Plaintiff closes.

134 NEW YORK, *April 12th*, 1888—11 a. m.

Present: Mr. C. C. Beaman, for defendant, and Edwin M. Felt, for complainant.

FREDERICK W. WEISS, a witness called for the complainant, having been sworn, testified as follows:

Q. 1. What is your name, age, residence, and occupation?

A. Frederick W. Weiss. I am 67 years of age. I reside at Mt. Vernon, Westchester county. I am a glue manufacturer.

Q. 2. How long have you been a glue manufacturer?

A. Over 50 years.

Q. 3. And where?

A. Over 15 years in Germany and 35 years in this country.

Q. 4. How extensively have you manufactured glue?

A. I have made in a day 600 pounds, and sometimes as high as 1,200 pounds a day.

Q. 5. What is your average manufacture now?

A. On account of the city of New York taking the water from my place at Mt. Vernon I have stopped altogether.

Q. 6. Please state the different steps practiced by you in the manufacture of glue in this country.

A. I first begin with the preparing of the raw material; the raw material is bought in a wet state or in a dry state. It is generally bought by the bushel, and in the dry state it is bought by the pound. When the dry stock is bought it is first soaked in water for a day or two; heavy stock some time longer. Such stock is taken out of the water to let it press on a pile till the water runs off; then there is prepared lime water—to bring a part of the stock in the lime water. It is stirred up pretty well or pounded and another layer of the stock over again is brought and lime water is poured over it again, stirred up and pounded again, as before,

135 until the vat is filled up just in the same way. Such a stock will lay in a vat, in this first lime water, for two weeks or more. Then it is taken out again from that lime water and put on a pile; then we let it lay in a pile for a day or so; then I make a new lime water again and put the stock in that second lime water again, leave it there for a couple of weeks; then it is taken out in washing boxes for washing out all the lime and the dirty substance out for one day; taken out of that water, making a bath of sulphuric acid water and put the glue stock in that acid for one night or perhaps five or six hours. This is for killing the lime which might have been left in the stock after it is worked. Then the glue stock is brought out and washed in clear water for washing away the acid and the remainder of the lime to make it perfectly clean. So there are two articles—the lime and the acid—necessary for cleaning the stock perfectly, but both are a danger and damage to the glue if they are not perfectly washed out again. They should both be washed out altogether. Then the glue stock is brought into the boiling tank. It takes about from three to four hours to boil such a lot of glue stock. There are two ways—a first run may be

drawn off from the glue which gives the best quality of glue; then glue water is poured in the tank again and boiled again for a couple of hours, and that drawn off makes the second quality of glue; then the refuse which is left in the tank—clear water is pumped into the tank—boiled again thoroughly till all the glue stock is dissolved. This liquid makes what we call glue water, which will be used for new glue stock; then the refuse left in the tank is good for manure; then the hot glue that was run in the tank is prepared in different ways, cleared or colored just as the manufacturer prefers; then it is run off into the cooling boxes where it gelatinizes; stands
136 there for a night or a day according to the atmosphere, whether it is cool or warm; then from those boxes it is cut into thin slices by a machine and spread on drying nets for drying. When it is nearly dry, so that it don't stick too hard on the nets, it is taken off, and it can be put into lofts for drying it perfectly; then it is put in a machine for breaking the glue in small pieces, and then packed into barrels and boxes. By small pieces I mean about one inch or an inch and a half square. It is then ready for market.

Q. 7. You have detailed the process where dry stock is used. Please state the process where what you call wet stock is used.

A. The wet stock is in a soft state; it doesn't require any soaking; therefore it can be put in lime water right off so that the blood and dirty stuff can be loosened, and the further process is about the same as the dry stuff, except such wet stock, when it is already prepared for boiling, it contains more water than that of dry stock; therefore it generally is put into a press to press the water out of it and then it is put into the boiling tank and the process is the same as the dry stock.

Q. 8. Are all these steps in the manufacture which you have detailed necessary in order to produce good glue?

Objected to as leading.

A. Yes; they are except if you want to make second-rate glue you give it only one soaking in lime water.

Q. 9. Please state the different kinds of stock which are used for making glue, first stating what is dry stock and then what is wet stock.

A. The dry stock is generally made at the tanneries where they cannot readily or near by sell the wet stock—there is different kinds of dry stock—glue stock from cattle and stock from sheep, stock from deerskin; the cattle stock is considered the best; it is
137 made mostly in the tanneries. The sheepskin is made mostly in the morocco factories where they make mostly sheepskin and goatskin. A great deal of wet stock comes from the slaughter-houses; it is the cattle feet and some wet stock comes from tanneries and morocco factories.

Q. 10. What are tanners' scraps?

A. It is an inferior kind of stock—some shavings from the hides with a good deal of grease and sometimes flesh. It is mostly considered the poorest kind of stock; it may either be dry or wet. The trimmings of the hides—the light pieces, the cuttings of the

hides—are the best and give out the greatest percentage of glue. One pound of glue stock, you get more and better glue out of it.

Q. 11. Which, if any, of this glue stock that you have spoken of do you receive limed or unlimed?

A. That depends on whether the tanner has limed the hides or not; some is unlimed and some limed; some is mixed.

Q. 12. What is the object in liming the stock as the first step in the process of manufacture as you have stated?

A. To destroy the rottenness on the stock and make the dirty stuff loose on the stock—blood or any other kind of dirt—and to make the stock fresh so as to be able to wash it out when it comes into the water of the washing box.

Q. 13. Is it necessary in order to produce good glue that the stock should be first limed, as you have stated, and the lime washed out thoroughly?

Same objection.

A. Yes, sir; it is an old standing rule.

Q. 14. What would be the effect upon the glue if it were not done?

A. When the glue which is produced without this process is put on the drying nets it cannot resist the warm or damp weather during the time for drying. It very soon will begin to get watery
138 and rotten before it is dry and in some warm days such glue will not stand at all on nets; it will fall through the nets and the whole batch is lost altogether; only in very cool or fresh weather it may stand on the nets, but it will make a very poor quality of glue, which has a smell generally.

Q. 15. Would such a glue, in your opinion, make a serviceable lining for the inside of barrels?

Same objection.

A. I shouldn't think it would.

Q. 16. Please state why.

A. It would be the same in fact; as the glue in the barrel would not dry, it would be just as bad as it is on the nets.

Q. 17. Can you make any glue from hoofs of any kind?

A. I never could. Sometimes between the stock there are hoofs, and they go through the process the same as the other stocks, but don't give out any glue.

Q. 18. Can you get any glue from pieces of leather?

A. From tanned leather? I made some trials, but I couldn't get any glue from tanned leather scraps. I tried the tanned shavings from the curriers, but couldn't get any glue.

Q. 19. What is the longest time that you boil your scraps or glue stock?

A. It is from three to four hours—that is, when the stock is prepared, as I have stated.

Q. 20. What would be the effect of boiling it from eight to ten hours or longer?

A. It would hurt the gelatinizing of the glue and also the strength.

Q. 21. Can you get the best results by boiling from three to four hours, as you have stated?

Same objection.

A. Yes, sir.

139 Q. 22. And it is your opinion, is it, that boiling it much longer than that produces a poorer quality of glue?

Same objection.

A. Yes, sir; I think it is a standard rule as soon as the glue is boiled enough to draw it off and put it into a clearing tank.

Q. 23. In your opinion, would the glue, made after boiling it from eight to ten hours, make a serviceable lining for the inside of oil barrels?

Same objection.

A. Of what kind of stock, prepared or unprepared?

Q. 24. Tanners' scraps, rawhides, odds and ends of hides.

A. Unprepared stock, just as they buy it; no, it would not make a good glue; I should not think it would make a serviceable lining.

Q. 25. Please state why.

A. Such glue prepared in such way from such stock doesn't dry properly, as it should, and has not the strength that it should have.

Q. 26. In your opinion, would the glue be weakened by boiling it from eight to ten hours?

Same objection.

A. Yes, sir.

Q. 27. How much glue can be obtained from three bushels of tanners' scrap and rawhide?

A. From 15 to 20 pounds of glue from three bushels. If it was all scraps it would be 16 or 17; if it was cuttings it would make more.

Q. 28. How much more from cuttings?

A. If it was from good cuttings it would make from 25 to 30 pounds of glue; if the cuttings are clean, if there is no lime in them, it would make 30 pounds.

Q. 29. How many oil barrels would 25 pounds of glue line on the inside?

A. I can't exactly state; maybe 50 barrels.

Q. 30. Any more than 50 barrels?

A. I hardly think.

140 Q. 31. Would three bushels of tanners' scrap or rawhide pieces which were put into a kettle just as received from the tannery, without any lining, or with lining and without washing the lining out before boiling, produce 25 pounds of glue?

Same objection.

A. It requires a long time to boil the glue pieces up into glue

(The witness requires the question to be re-read and resumes his answer:)

It depends whether the cuttings or scraps are more in it. If more scraps is in it, it won't make 25 pounds.

Q. 32. In your opinion, does glue enter the pores of the wood when applied to it?

A. Yes, sir—that is, if the wood is dry.

Cross-examination by Mr. BEAMAN:

X Q. 33. How long have you been manufacturing glue for yourself?

A. About 37 to 38 years.

X Q. 34. How long in this country?

A. Since 1849, from the 1st of May.

X Q. 35. Where and how long in Germany?

A. About from 14 to 15 years in Germany, at my father's factory, at Hilchenbach, Westphalia.

X Q. 36. Is there much competition in the glue business in the United States?

A. Yes, sir.

X Q. 37. Every man trying to make his glue in the cheapest way to get the desired quality?

A. Yes, sir.

X Q. 38. Has there been any changes or improvements in the process in the last 38 years?

A. There have some.

X Q. 39. Is the process you have described the one you are using at the factory in Mt. Vernon?

A. Yes, sir; as long as I have ever made glue, both here and in Germany.

X Q. 40. No secret about it, is there?

A. Yes, sir; there is some secret.

141 X Q. 41. What part of it is secret?

A. It is generally amongst gluemen; the clearing or coloring of the glue, that is secret; at least I keep it secret.

X Q. 42. But the general process you have described is well known and practised by glue-makers in the United States?

A. Yes, sir; to make a good quality of glue.

X Q. 43. What other processes have you known glue-makers to use?

A. They have different ways of washing the stock—different machinery; one washes his stock one way, and another his own way.

X Q. 44. Any other differences?

A. None; I know of no other.

X Q. 45. Did you ever make any glue from stock that has not been limed?

A. Yes.

X Q. 46. When?

A. I limed it myself.

X Q. 47. Did you ever make any glue from stock that had not been limed and that you did not yourself lime?

A. No, sir; except one year I had some cattle feet which I couldn't lime; then I used other stock that had been limed with that.

X Q. 48. Couldn't you make glue out of cuttings of rawhide or tanners' scrap without liming them?

A. I never did it and never tried to do it.

X Q. 49. Did you ever try to make glue out of tanners' scraps without liming them yourself?

A. When some time very well limed stocks came I used some of it, but not often.

X Q. 50. Why do tanners lime skins or hides?

A. They have to do it so as to keep the stock freer from rotting—to preserve the stock.

X Q. 51. Is the wet stock you get from tanners ever limed when you get it?

A. Sometimes, and most always limed.

X Q. 52. By looking at it can you tell whether it is limed or not?

A. Certainly.

142 X Q. 53. Is the dry stock which you get from tanners mostly limed when you get it?

A. Yes, sir; but not sufficient for my process.

X Q. 54. Can you tell by looking at it whether dry tanners' scraps have been limed?

A. Yes, sir.

X Q. 55. What would be the result of making glue from tanners' scraps that have not been limed?

A. The glue of such stock would always be dark colored, bad smelling, sometimes, and little strength.

X Q. 56. Any other trouble?

A. During the drying process it gets hurt by wet weather and warm weather, and a good deal is likely to spoil before it gets dry.

X Q. 57. Did you ever see any glue made this way?

A. Yes; I have seen a great deal of it made.

X Q. 58. Where and when and by whom?

A. Here in the market, when I first came into this country. It was a stinking, dark, bad glue, which couldn't have been made as I make it. It wasn't such good glue as we were making in Germany.

X Q. 59. Is there any such glue in the market nowadays?

A. They make much better glue now.

X Q. 60. How long since you have seen any such glue in the market?

A. Within the last four or five years, under the name of foot-water glue. Sometimes they called it foot-water, which has hardly any strength.

X Q. 61. Do you know how it was made and what it was made from?

A. Yes, sir; the glue-maker takes the cattle feet from the slaughter-houses, takes off the skin, takes off the hoof and what is left of the

hoof, the bones and sinews around it, boils it in the tank to get what they call the foot-water—very weak glue.

X Q. 62. It is made into a jelly and dried like other glue, is it not?

A. It is condensed and made into a jelly and then dried. Sometimes they mix other stock with it.

143 X Q. 63. Were these cattle feet treated with lime or acid in any way?

A. I don't think so. I don't know for sure.

X Q. 64. Was this foot-water glue worse or better than the glue that was generally for sale in the market when you came to the United States?

A. No; I wouldn't say that.

X Q. 65. What would you say about it?

A. The foot-water itself is better now than it was at that time.

X Q. 66. A little while ago you said when you came to this country there was a good deal of dark, bad-smelling glue in the market. Did you mean foot-water glue?

A. I don't know how it was made. I never was in the factories.

X Q. 67. Did they used to make this foot-water glue in Germany also? And in your answer describe what you mean.

A. First, I must describe in Germany the butchers have a different rule. They take off the skin down to the hoof; then the butchers themselves take the hoof and boil and make a sausage of it.

X Q. 68. Do any persons make glue of cattle's feet in Germany?

A. They make glue of cattle's feet and sheep's feet and calf feet.

X Q. 69. Without liming them?

A. I have seen them limed, but in our factory we never used them.

X Q. 70. What would be the effect or result if a man made glue from tanners' scraps that had been limed without himself reliming them?

A. It first depends upon how strong the stock is limed. Sometimes they have limed it very heavily for making it weigh—get so many more pounds out of it—and for drying the stock quicker. To boil such stock with that lime would make a poor article of glue, which often will not stand on the nets.

X Q. 71. Did you ever make glue that way?

144 A. Yes; I tried it one time. Some people call for low-price glue, so I tried this way once and made some glue to save the expenses of reliming it, and didn't try it again.

X Q. 72. When was this?

A. It was about some four or five years ago when the price of glue became so low.

X Q. 73. How much glue did you make this way?

A. I made about 1,000 pounds, maybe a little more, of dried glue.

X Q. 74. What did you do with it?

A. I sold it for 11 to 12 cents per pound.

X Q. 75. What was your best glue bringing at that time?

A. Eighteen cents.

X Q. 76. Tell exactly how you made this 1,000 pounds of glue.

A. I boiled the tanners' dry hide pieces just as I got them from the tanners; they were good pieces, nicely limed, and the lime washed out, and I received complaints of this glue.

X Q. 77. To whom did you sell it?

A. I sold it to Baldwin & Fulgraff, part of it to another paper-box maker, and part of it to a paint store.

X Q. 78. Did you make any allowance to these parties on account of the character of the glue?

A. Yes, sir; I did; I made it a little cheaper.

X Q. 79. What was the complaint about this glue?

A. It was not so good as my glue before.

X Q. 80. In what respect was it not so good?

A. It didn't answer for their work as my former glue; it didn't stick so well.

X Q. 81. What price did you originally charge them for this glue?

A. From 15 to 16 cents.

X Q. 82. After they complained, what allowance did you make?

A. I reduced it to about 13 cents; I can't recollect; they told me straight out the glue wasn't as good as I had delivered before.

X Q. 83. When you sold it to them, did you tell them how it was made?

A. No; I showed them a sample.

X Q. 84. Did it smell badly?

A. It didn't smell.

145 X Q. 85. Was it dark-colored?

A. Not dark; it wasn't quite as light as I always had had it. This was on account of the stock being pretty well limed; if it hadn't been limed so much it would have been of darker color.

X Q. 86. Did you ever know other glue-makers to make glue from tanners' scraps and hide cuttings in the way you made this 1,000 pounds of dried glue?

A. I don't know any man who made it exactly the same, but pretty nearly the same.

X Q. 87. Describe who made it pretty nearly the same and how they made it.

A. The name of the man is Ebans, in Gloversville, New York; he took the lime stock without reliming it and put it in a fulling mill and then boiled it; that was perhaps ten years ago. His successor, Brower, did it the same way. They sold it here mostly on the market, and sold at very low price, and was recognized as a very weak glue; sold it at about 4 or 5 cents a pound cheaper than what I sold my best glue.

X Q. 88. Anybody else make glue this way?

A. I don't know of any one else; I understood when I first began in 1849 and 1850 that there was another man there near me in Virginia who tried to make glue that way from the tanners' stock without himself first preparing it. I had a factory then in Johnstown, in Pennsylvania, and this man was across the river in Virginia, near Harper's Ferry.

X Q. 89. Did you ever see any of this man's glue?

A. No, sir.

X Q. 90. How long did you know of his using this process?

A. When I first went round buying glue stock at the tanners, I found this man buying also. When I went around the second time about six months afterwards, he was busted and gone.

X Q. 91. Is there any advantage whatever in liming glue stock of any kind, except to get it clean?

146 A. It is of advantage to make a stronger glue by cleaning the stock. It depends upon what stock it is. If it is cleaned right and limed right it makes a stronger glue, never mind what stock it is, whether pieces or shavings.

X Q. 92. Is the liming of any advantage except to clean the stock?

A. I have mentioned the advantage.

X Q. 93 repeated.

A. It is for the purpose of making a better quality of glue.

X Q. 94. Does the liming produce any advantage except to clean the stock?

A. I have mentioned all the advantages; that the glue will dry better, stick better; that is all the advantages that comes from it.

X Q. 95. Wouldn't the same advantages be obtained if the stock was cleaned in some other way than by liming?

A. I don't know of any better way.

X Q. 96. I didn't ask you if you knew of any better way of cleaning the stock, but I asked you if you could not obtain the same advantages if the stock was cleaned in some other way.

A. I could not.

X Q. 97. Did you ever try to clean the stock in any other way?

A. No, sir.

X Q. 98. If glue stock is clean is there any advantage in liming it further?

A. Yes; there is an advantage of liming it with very thin lime water.

X Q. 99. What does that thin lime water do?

A. Even clean stock if it is limed with thin lime water and washed out again will give glue of better quality for drying and for holding.

X Q. 100. What harm does it do if all the lime or lime water is not washed out of glue stock?

A. Such stock when put in a boiling tank will be dissolved in half the time and give a glue which will not gelatinize at all; will be what we used to call soup—never gelatinized, keeping like water in the coolers.

147 X Q. 101. Then if there is too much lime it won't gelatinize?

A. If there is a particle of lime there it won't jelly and the whole thing may be thrown away.

X Q. 102. What is the object of treating the glue scraps with acid?

A. When the glue stock from the lime water is brought into the washing apparatus, the greatest part of the lime substance is washed

out of the stock; but in the inside of the glue stock there is the spirit of the lime in yet, so that the whole stock appears to be very nice; the spirit of the lime is inside of the pieces yet. Now, to destroy that inside lime, for that reason it is brought inside the acid bath. Sulphuric acid goes with the lime inside of the stock chemically and kills the lime there; both of it from the combination of lime and acid must be washed off again.

X Q. 403. Did you ever make any glue without treating the glue stock in the sulphuric acid?

A. Yes; in Germany we never treated it in our factory with sulphuric acid.

X Q. 104. And made good glue there without it?

A. Made good glue, but the stock there was finer, thin pieces, like paper and could wash them better.

X Q. 105. Did you begin using sulphuric acid when you first came here?

A. No, sir.

X Q. 106. How long before you used it here?

A. I didn't use sulphuric acid here in the beginning.

X Q. 107. When did you begin to use it?

A. I can't exactly say that any more; about 32 or 33 years ago; I can't say; it was soon after I started; the atmosphere and the climate caused me to change my way of manufacture.

Further cross-examination adjourned to April 14th, 1888, at half past ten a. m.

148 Present: Messrs. Felt & Reed, for complainant, and Mr. Beaman, for defendant.

Cross-examination continued by Mr. BEAMAN:

X Q. 108. Why did you press from the wet scraps the water?

A. The wet scraps hold too much water.

X Q. 100. What do you mean by that?

A. By bringing such wet stuff, particularly of green stock, to put in a boiling tank would make the glue too thin.

X Q. 110. Suppose the glue was too thin, what would you do with it?

A. I didn't make such glue with that water.

X Q. 111. What do you do with glue or what could you do with glue that was too thin?

A. It can be condensed.

X Q. 112. How?

A. By a condensing apparatus made for such purpose where such glue is condensed.

X Q. 113. Describe the apparatus.

A. The apparatus is on the same principle as what they have in the sugar refinery. I don't have any.

X Q. 114. They put the liquid glue in this pan and heat it up and evaporate the water from it, do they not?

A. Yes.

X Q. 115. At what temperature?

A. I am not acquainted with the process.

X Q. 116. Does not the length of time taken to make glue by boiling depend part upon the amount of water that you have in the kettle?

A. Yes.

X Q. 117. Suppose you put twice as much water in the kettle as you usually do, how long would it take you to boil it down to the proper consistency for drawing it off?

A. I didn't make exactly such a trial.

X Q. 118. Answer to the best of your judgment.

A. It might take two or three hours to steam it out again.

149 X Q. 119. You would still get good glue in the end, wouldn't you, only it would take you longer to boil it?

A. No, sir.

X Q. 120. What would you get?

A. I would get the glue, which is weaker, with less boiling, and it would hurt the gelatinizing of the glue. In the cooling boxes it wouldn't be so stiff and hard and couldn't be handled so well for cutting and spreading on the nets.

X Q. 121. Any other difficulties?

A. No; except the loss of time and the expense of fire to keep up the boiling.

X Q. 122. Don't some glue-makers use much more water in their stock than you do and boil it longer?

A. I don't know.

X Q. 123. Don't many glue manufacturers evaporate the water from their glue in separate tanks, keeping the liquid glue heated to a high temperature?

A. When other glue-makers condense the glue it is always done at a low temperature, as low as they can do it in the evaporating pans.

X Q. 124. How low?

A. I said before that I was not acquainted with the process. What I heard from other factories they take it at a low degree. How low I don't know.

X Q. 125. At what temperature do you boil your glue?

A. I never measured the temperature, and have no thermometer for that purpose.

X Q. 125. How do you tell when the glue in the pot is too hot or too cold?

A. I keep a medium boiling, not too hot. I can't tell how hot.

X Q. 127. What kind of kettles do you have?

A. I had large copper kettles with an open fire under them.

X Q. 128. Didn't use steam at all, did you, then?

A. No.

X Q. 129. Was that the way your father boiled glue in Germany?

A. Yes, sir.

150 X Q. 130. Could you make good glue in this way by boiling with an open fire under a copper kettle and without any thermometer?

A. Yes, sir; I could make good glue, but I want to be very careful about firing the kettle, not to make it too hot.

X Q. 131. How long have you been accustomed to press the water out of the wet glue stock?

A. I have done that always as long as I make glue.

X Q. 132. How do you tell when the glue has been boiled enough to take off the first drawing?

A. I can see it pretty near on taking the hot glue with a spoon and let it run slowly from the spoon, and besides this to make some proofs in little plates by taking out a little glue and let it get cool on a plate and then see how thick it is.

X Q. 133. Do you have any hydrometer or other instruments to see whether the glue is thick enough?

A. No; I had no instruments. I go by my experience.

X Q. 134. As you draw off the glue from the melted pot and let it cool what is the proportion in the jelly of glue and of water?

A. I didn't make exactly that trial. It may be five parts of water and one part of real dried glue, just as I had it ready boiled. It might be less. I can't say exactly.

X Q. 135. How many lbs. of dried glue can you get from 100 lbs. of jelly?

A. I can't tell exactly.

X Q. 136. Tell us nearly as you can.

A. Maybe $\frac{1}{6}$th, depending on glue from solid hides; it may be a little more glue.

X Q. 137. Do you mix the several drawings from the boiling pot?

A. Yes; I generally do.

X Q. 138. What is size?

A. Size is what they generally call liquid glue—that is, glue that is not dried.

X Q. 139. Did you ever make any?

A. Yes; I made some.

X Q. 140. When first?

A. I did not make much. I can't say exactly when.

151 X Q. 141. Did you make any in Germany?

A. No, sir.

X Q. 142. Did you ever see any there?

A. No, sir.

X Q. 143. Did you ever sell any anywhere?

A. I sold some here.

X Q. 144. When?

A. I can't say exactly when it was.

X Q. 145. 30 years ago?

A. No; I can't say.

X Q. 146. How long ago was it?

A. It may have been 25 years ago; I can't say exactly. I didn't sell it as sizing. I sold it as wet glue.

X Q. 147. Who did you sell it to?

A. Paper-hanging factory, where they don't need strong glue.

X Q. 148. What were the proportions of glue and water in this size?

A. I mentioned before I cannot make a correct statement if the glue is not condensed.

X Q. 149. Did the size form a jelly when cold?

A. Yes.

X Q. 150. Do not some manufacturers make size which is as thick and strong as the glue which you slice up for drying?

A. Yes; but they condense it before coming to use.

X Q. 151. Did you ever condense any in that way?

A. No, sir.

X Q. 152. Did you ever sell any liquid glue or glue jelly that was condensed sufficient to be dried?

A. No, sir.

X Q. 153. Have you ever used glue yourself for any purposes?

A. Very little, except for sizing walls in my house.

X Q. 154. What kind of glue did you use for that purpose?

A. I used the glue water; that will do for that purpose.

X Q. 155. Does the glue water jelly when it gets cold?

A. It's gelatinized when the temperature is about 40 degrees Fahr. When it is 50 and 60 Fahr. degrees it does not gelatinize.

152 X Q. 156. For what other purposes have you ever used glue?

A. I didn't have any use for glue; I am not a cabinet-maker or wood-worker.

X Q. 157. Have you never used glue to stick pieces of wood together?

A. I may have, on some little thing.

X Q. 158. Do you remember any?

A. Not exactly.

X Q. 159. What do you remember about it?

A. I forget what it was I glued together some time.

X Q. 160. Did you ever line any barrels with glue?

A. No, sir.

X Q. 161. Did you ever try to do so?

A. No.

X Q. 162. Did you ever see any one else do so?

A. No, sir.

X Q. 163. Did you ever put any glue on the outside or inside of barrels?

A. No, sir.

X Q. 164. Why do you dry glue in your business?

A. To bring it ready for the market.

X Q. 165. What would happen if you didn't dry it and sold it in jelly form?

A. I would have to stop the business.

X Q. 166. What would happen?

A. Why, the majority of the customers of glue are using the dry glue, only a few which may use liquid glue, and I could not depend on them entirely.

X Q. 167. What customers use liquid glue?

A. I can't name all liquid-glue users.

X Q. 168. Name some of them.

A. Paper-hanging manufacturers.

X Q. 169. Any other?

A. I couldn't say any more; that is as far as my experience goes.

X Q. 170. Is liquid glue and size the same thing?

A. I can't say but that some others put some chemical preparation with the size, which I did not.

X Q. 171. What is this chemical preparation put with the size—to keep it from spoiling?

A. Mostly that's what they use it for.

153 X Q. 172. Is not size or liquid glue the common name that is applied to glue that has never been dried?

A. Yes; sizing, they generally call it.

X Q. 173. How long will sizing keep sweet and good if a barrel is filled with it, say, in the month of April?

A. That depends altogether whether the raw material is spoilt with the lime, fat, grease, and rotten stuff that is all left in the stock and boiled together; then the sizing has right away a bad smell and will increase from day to day more, and in about 3 or 4 days it is pretty near useless instead of good stock, prepared stock, lime stock, washed stock. As I prepare my stock generally it will stand for a week or two in cool weather; in April might be three weeks.

X Q. 174. Do you frequently keep the glue jelly, as you make it, 2 or 3 weeks in winter time before you slice it up and dry it?

A. No, sir.

X Q. 175. What means do you use for drying your glue, artificial heat or the air?

A. In former years I used the air only for drying; later years I had drying-rooms, with warm air and a circulation kept up by steam fans.

X Q. 176. How long will dried glue keep sweet?

A. Dried glue made up from prepared stock just as it comes from the tannery, such dried glue will not be sweet from the beginning, and the glue will have a stink all the time afterwards. The well-prepared stock, as I have mentioned, is free of smell and sweet and will stay so.

X Q. 177. How long will it keep?

A. Forever.

X Q. 178. And the dried glue prepared from unprepared stock will keep forever stinking?

A. Yes.

X Q. 179. Is there any object that you know of in drying glue except to put it in such form that it will keep indefinitely and be ready for use by adding water to it and remelting it?

A. I don't understand that question.

154 X Q. 180. Is there any object whatever in drying glue except to put it in a state where it will keep indefinitely and be easy for transportation and ready for use when needed?

A. I don't know any other object.

X Q. 181. Is not dried glue always made ready for use by adding water to it and remelting it?

A. Yes.

X Q. 182. Is there not for sale in the market certain glue stock which is known as prepared stock?

A. Generally under the name of limed stock.

X Q. 183. What kind of stock is that?

A. That is the different kind of stock soaked in lime water in the wet state; then some of it is washed out and dried, and some is dried with the lime on without washing.

X Q. 184. How long have you known these two kinds of lime stock to be for sale in the market?

A. As long as I have been making glue here—in this country.

X Q. 185. As regular articles of purchase and sale?

A. Yes, sir.

X Q. 186. Where?

A. All over the country where the tanners are and round here in the city.

X Q. 187. To whom are these two kinds of limed stock ever sold?

A. Of course mostly to glue-makers.

X Q. 188. To what other persons?

A. I can't name them all. I don't know exactly.

X Q. 189. Name some of them.

A. I guess there are some papermen who use this prepared stock.

X Q. 190. And make there own glue from it?

A. I suppose so. They didn't need it for any other purpose.

X Q. 191. Have you ever used any of this prepared stock?

A. Yes, sir; mostly.

X Q. 192. Can't you make good glue from this prepared stock that has been limed, washed, and dried by simply adding water to it and boiling it?

155 A. I couldn't make any good glue that way. I might make a medium kind of glue, but not the best No. 1 glue.

X Q. 193. Is glue sold in the market by different grades or numbers?

A. Yes, sir.

X Q. 194. How many grades are there?

A. One manufacturer makes perhaps 8 or 10 different grades; I made only about two grades.

X Q. 195. What are your two grades, No. 1 and 2?

A. Extra and No. 1; very seldom No. 2.

X Q. 196. Are your grades extra and No. 1 as good as corresponding best grades of other manufacturers?

A. Well, about the same.

X Q. 197. And you never have made any of the grades Nos. 2, 3, 4, 5, 6, 7, and lower?

A. No, sir.

X Q. 198. About what was the grade of that glue you sold to Fullgraff for 15 or 16 cts. a pound and reduced it?

A. That would be about No. 3.

X Q. 199. What kinds of glue are there most sold in the market, grades above No. 3 or below No. 3?

A. I suppose the greatest quantity is sold in the lower and middle grades.

X Q. 200. How about this what you called foot-water glue grade—how would it grade?

A. Well, they have about three to four different kinds of foot-water.

X Q. 201. Would it grade above or below No. 7?

A. I don't know.

X Q. 202. Would it grade above or below No. 4?

A. I can't say.

X Q. 203. Do all the grades below No. 3 stink, as you call it?

A. I don't know, sir.

X Q. 204. Do most of them?

A. A good many.

X Q. 205. What are these lower grades used for?

A. For sizing walls, &c., where they are not particular.

X Q. 206. Are they not used by wood-workers?

A. I mostly find they won't have stinking glue.

X Q. 207. Question repeated.

156 A. They may use it for some very common work they don't want; usually for very cheap work.

X Q. 208. Did you ever make any grades of glue in Germany below No. 2?

A. Never.

X Q. 209. How are these grades of glue from No. 2 to No. 7 or 8 made, and by whom?

A. I can't say.

X Q. 210. Don't you know how they are made?

A. Cooper makes some of the lower grade; Philadelphia makes some of them and Chicago.

X Q. 211. How do they make them?

A. I don't know how.

X Q. 212. Have you any idea how they make them?

A. I think they make it mostly where they work the cattle feet through.

X Q. 213. And without liming or treating with sulphuric acid?

A. I can't say. I don't know.

X Q. 214. Have these grades of glue below No. 3 been for sale on the market ever since you have been in the United States?

A. Yes, sir.

X Q. 215. Were there not more of these grades of glue sold prior to 1870 than there are now?

A. I couldn't say.

X Q. 216. Do these people, Messrs. Cooper, and the Philadelphia people make the higher grades of glue as well as the lower?

A. Yes, sir.

X Q. 217. What is the wholesale price to-day of your extra and No. 1 and No. 2 glue?

A. I am not in the market now.

X Q. 218. Why not?

A. I stopped the factory on account of the scarcity of water in my factory.

X Q. 219. What was the last price you sold your extra No. 1 and No. 2 glue?

A. I sold my No. 1 for 17 and 18 cts. I did not make any extra this year; have sold my extra glue as high as 37 cts.

157 X Q. 220. When the price in the market is about 18 cts. for your No. 1 glue, what usual would be the proportionate price of glues grading Nos. 3 to 8?

A. There was glue for 16, 15, 12, 10, 8, 6, and 5 cts. per pound; sometimes still lower.

X Q. 221. You mean for dried glue?

A. Yes.

X Q. 222. When your No. 1 glue was worth about 18c. a lb. on the market, what would the higher grades of glue be worth—say your extra or higher grades of other manufacturers, if there were any?

A. 19, 20, and as high as 24c.

X Q. 223. What are these highest grades of glue used for?

A. They are, for instance—one branch of business for straw hats—one extra glue for printers' rollers, for fine fancy papers—for address cards they use it. Piano-forte makers use it, and some for very fine collar work. That is all I remember.

X Q. 224. Isn't there a very large quantity of glue imported into the United States?

A. Yes, sir.

X Q. 225. And doesn't this glue that is imported mostly grade below No. 3?

A. Below No. 2, mostly.

X Q. 226. Isn't a great quantity of it what you call foot-water glue?

A. I don't know what they make it of.

X Q. 227. What is the duty on glue?

A. When I imported glue from Germany I had to pay 20 per cent. ad val.

X Q. 228. Doesn't most of this imported glue stink, as you call it?

A. I found some stinking glue and I found some nice glue, too.

X Q. 229. Do you know how most of this imported glues from other countries is made?

A. No.

X Q. 230. Did they use to make such kinds of glue in Germany when you lived there?

A. They don't make so much bad glue in Germany; most of it comes from Ireland and France.

Redirect:

158 R. D. Q. 231. In answer to question 10 you speak of shavings from hides with a good deal of grease. Please state what you mean by grease.

A. When the butcher takes the hide from the cattle there's always some fat from the cattle on the hides, so that the tanner when

he gets those hides and takes off the trimmings and the scraps then the fat of the cattle is on that scrap and the pieces.

R. D. Q. 232. And is it in part to remove this fat that these pieces are limed?

A. Small part might be removed from it by liming and by washing and by soaking in the acid, but the greatest part of such fat will go with the glue stock in the boiling tank; fat generally is very bad for glue, therefore it is necessary to extract the fat during the boiling of the glue. Some fat may be skimmed off without the chemical process, but not near enough; some chemicals are used for extracting the fat and grease perfectly out of the glue. Glue, when fat is not extracted, will be very hard to dry.

Recross:

R. X Q. 233. Didn't you ever make glue without extracting fat by chemical processes?

A. In such cases where we are sure there is no grease on the hides, as hides from South America, Buenos Ayres, and such places. The tanners' stock here generally has a lot of fat in it.

R. X Q. 234. Does the fat do any harm besides making the glue more difficult to dry?

A. It hurts the sticking nature of the glue very much; two pieces of wood being greased cannot be glued together.

R. X Q. 235. Do the grades of glue below No. 3 contain much grease?

A. I didn't try it.

R. X Q. 236. What's your opinion about it?

A. I cannot form any opinion about it because I didn't make any experiment. I can't tell.

R. X Q. 237. In the boiling of glue does not the fat rise to the top?

A. Only a part of it.

159 R. X Q. 238. In the making of glue from cattle's feet are the hoofs generally cut off before they are put into the pot?

A. They are not cut off; they are put in a large pan of boiling water to make them loose—not quite loose, but loose enough to press them out by the machine; then in such case the hoofs are never put in the boiling pan.

R. X Q. 239. Are not hoofs frequently put in the boiling tank together with the feet?

A. I always have taken the hoofs off that way, and where I have seen in other factories they have done the same.

R. X Q. 240. Is it a well-known fact that hoofs are fitted for other purposes better than being put into the glue pot?

A. When I worked cattle feet through of course it was worth more for other purposes.

R. X Q. 241. Would it hurt the glue if the feet were put into the tank?

A. It would be a very troublesome thing to have such a pile of hoofs in the tank. It would more hurt the glue than help it.

R. X Q. 242. How would it help it?

A. It would not help, it would hurt it; one part of the hoof has not the nature like a horn, and that part is a very bad part and dissolves in the glue and has no sticking quality whatever and injures the strength of the glue. It might bring a little more weight in the glue, but hurts the glue in quality.

R. X Q. 243. Wouldn't you get some glue out of the horny part of the hoof?

A. No.

F. W. WEISS.

CHARLES WIEDERHOLD, a witness called on behalf of complainant, having been duly sworn, testified as follows:

Q. 1. What is your name, age, residence, and occupation?

A. Charles Wiederhold; I am 58 years of age; residence,
160 in Yonkers, Westchester county, New York; my occupation is that of glue manufacturer.

Q. 2. How long have you been engaged as glue manufacturer?

A. Thirty-seven years.

Q. 3. In this country?

A. Thirty-five years in this country.

Q. 4. And the rest?

A. In Germany.

Q. 5. Since you have been in this country you have manufactured for yourself?

A. For myself; yes, sir.

Q. 6. How extensively have you manufactured glue in this country?

A. About 700 or 800 barrels a year—about 130 to 150 pounds per barrel.

Q. 7. Please state the different steps taken by you in the manufacture of glue.

A. Our glue stock—where the manufacture of glue consists most of the hide and skins—part wet and part dry stock. If the stock is dry it has to be soaked first in water about one day; if the water is lukewarm it won't take so long; if it is cold it takes longer. After that it has to be drawn out and the water drained off of it. From there it das to be put in a solution of lime; after it has been there for one or two weeks it will be thrown in a new solution of stronger lime. The liming depends on the kind of stock you have in process of liming; if it is cheap, or good, or dear, or rabbit, some other thin skins that don't need as long a liming as those, or small cattle hide. The process of liming extends from one to two months. After the process of liming the washing process commences, which mainly consists of neutralizing the lime from the stock. We bring it in a washing machine which generally removes hair and lime and other impurities; after getting through with the washing machine it is put in a bath of sulphuric acid; after the acid bath has thoroughly washed out the acid in pure and soft water, then drained from the superfluous water, then it is ready for boiling. A cer-
161 tain amount of water is put on the stock in the boiling vat and the stock boiled till most of it is dissolved. The time of

the first boiling is about three hours. The second from one to about one and a half hours; then all the stock ought to be dissolved entirely. There is a third boil which is only used for the next boiling, which we call the glue water. The first and second boil if we consider not strong enough is evaporated through an evaporating apparatus. After so evaporated the glue is run into the coolers to cool to a certain consistency and then run through the cutting machine, sliced and removed on nets for the drying process. After this the glue is broken up in the breaking machine and is ready for market.

Q. 8. You have spoken about preparing dried stock; please state now how you prepare your wet stock.

A. If the stock is wet and unlimed or salted, I soak it again like dry stock in water. If the stock is wet and limed I put it in old lime, used before for other stock, and then continue on the same processes as before, only the process might be shorter—needn't lime it so long.

Q. 9. What is the stock that you use in glue manufacture composed of?

A. Hides and skins, cattle feet; we used to use cattle feet—they are now out of the market.

Q. 10. What are tanners' scraps?

A. They are the cuttings and fleshings of hides, also fat, and they are scraped off—it is the trimmings; there are sometimes hair in it; they are scraped off and thrown in a pile—this is called glue stock.

Q. 11. What is the object in liming your stock?

A. To purify it and bleach the stock to make a better grade of glue, a better and lighter grade of glue; also to shorten the process of boiling with less degrees of heat.

Q. 12. What does the lime do to the stock?

A. It opens the pores and bleaches and removes all im-
162 purities, and removes all decomposed matters or destroys it.

Q. 13. Are all these various steps which you have detailed necessary in the manufacture of good glue?

Objected to as leading.

A. They are. It could not be done without it.

Q. 14. Is it necessary, in order to produce good and serviceable glue, to thoroughly remove the lime from the stock before boiling?

Same objection.

A. It is of the highest importance.

Q. 15. What would be the effect upon the glue if you did not remove the lime?

A. It would lose its strength and would be unfit for any good work and would be very difficult to dry. It would not stand any atmospherical changes.

Q. 16. What kind of a glue would you get if you boiled the stock without first removing the lime?

A. A very weak solution in winter. In warmer weather, above 60 degrees, it would hardly show any gelatine.

Q. 17. Would such a glue as you have just described, in your opinion, make a serviceable lining for the inside of oil barrels?

Same objection.

A. I don't think it would.

Q. 18. You say you boil it from three to four hours, first boiling. Is that boiling sufficient to attain the best results?

Same objection.

A. Yes; it is.

Q. 19. Suppose you boiled it from 8 to 10 hours, what effect would that have upon the glue?

163 A. It would reduce the strength and make the glue very brittle.

Q. 20. Could you get a serviceable glue then if you boiled it so long?

Same objection.

A. Not for the same purposes where it is intended.

Q. 21. For what purposes would it be serviceable?

A. Mostly for wood-work, cabinet-work, pianofortes, carpets, fancy paper-work, lining barrels, book-binding, the manufacture of hats, musical instruments.

Q. 22. Do you not require the best quality of glue for the purposes named in your last answer?

Same objection.

A. The best grade in the market.

Q. 23. Then did you wish to be understood as saying that if the stock was boiled from 8 to 10 hours instead of from 3 to 4 that it would be serviceable for the different purposes you have stated in your answer to question 21? I now read you questions 19, 20, 21, and 22 and your answers to them.

A. I understood you to refer to the 3 or 4 hours' boiling.

Q. 24. Then if it was boiled from 8 to 10 hours it would not be serviceable for the purposes mentioned in question 21?

Same objection.

A. No.

Q. 25. Can you make any glue from hoofs?

A. If they are dissolved in acid it might be done.

Q. 26. Have you ever done it?

A. Not hoofs—bones.

Q. 27. I mean from hoofs.

A. No; I never tried it.

Q. 28. Can you get any glue from leather?

A. Yes; you can.

164 Q. 29. Tanned leather?

A. You have to remove the tannin.

Q. 30. How do you remove the tannin?

A. Through acid and pressing.

Q. 31. Not otherwise?

A. Not otherwise.

Q. 32. How much glue can be obtained from three bushels of tanners' scraps and pieces of hide?

A. From 12 to 16 pounds.

Q. 33. Can you tell how many oil barrels that would line on the inside?

Objected to, as witness has not been shown to possess any knowledge as to lining oil barrels.

A. It might line from 30 to 40 barrels.

Q. 34. How much glue do you understand it takes to line the inside of an oil barrel?

Same objection.

A. If you have a strong glue you can line more, because it will take more water by dissolving. In such case you might line about three barrels out of one pound of glue; otherwise from 2 to $2\frac{1}{2}$, not even two barrels.

Q. 35. Where the glue is made from tanners' scraps and hide pieces put into the kettle and boiled just as received from the tannery, without any liming or removal of any lime, how much glue would three bushels of such scraps make, if you know?

A. It might not make any.

Q. 36. Under the most favorable circumstances how much would it make?

A. It might make 6 or 7 pounds. Out of ten times you would lose it nine. It is only risk—sheer accident.

Q. 37. Where glue is applied to wood does the glue enter the pores of the wood, if you know?

A. If there is nothing else in the pores it enters them.

Q. 38. What do you mean by nothing else?

A. Water, sometimes varnish, oil.

165 Q. 39. Then if the wood is clean and free from any foreign substance or coating the glue when applied does enter the pores. Is that your opinion?

Same objection.

A. Yes.

Cross-examination by Mr. BEAMAN:

X Q. 40. Would the glue enter the pores any more than water would or than molasses?

A. No; I should think glue would go first. It depends on the degrees of heat glue has; if glue is at 130 or 190 it is very liquid.

X Q. 41. Glue when it enters pores of wood only enters it in the same way as other liquids do. Is that so?

A. Yes.

X Q. 42. Did you ever line any oil barrels with glue?

A. No; I didn't myself. I only remember several barrels we glued for ourselves; neat's-foot-oil barrels.

X Q. 43. When did you do this?

A. About 14 years ago.

X Q. 44. How do you fix the date?

A. It may be 12 years ago I received a large quantity of cattle feet. I bought all the cattle feet in Westchester county. We had trouble with our neat's-foot-oil barrels; it was very liquid oil. The oil would leak out in summer, so we came to the idea of lining them with glue. We only did it during the summer time.

X Q. 45. How did you do it?

A. We took some of our strong evaporated liquid glue and poured half a pail; took the heads out and rinsed about 5 or 6 barrels with it and then dried it.

X Q. 46. Did you also glue the heads of the barrels with it?

A. We also glued the heads of the barrels with a brush and then headed the barrels up.

X Q. 47. Did the barrels hold the oil with this?

166 A. After that the barrels held the oil thoroughly, both in summer. The oil is thick in the winter, and we don't have to line them as in summer.

X Q. 48. Had you before this heard of other people lining oil barrels with glue?

Objected to as not cross-examination; counsel makes the witness his own witness.

A. Yes.

X Q. 49. Who had you heard had done it?

A. I knew that glue was used for kerosene-oil barrels.

X Q. 50. How hot did you heat the glue?

A. I don't think it was more than 170 to 180 degrees.

X Q. 51. Did you take the glue right out of your vats or coolers?

A. We took it out of evaporating pans.

X Q. 52. Before it had been cooled into a jelly?

A. Yes.

X Q. 53. How many barrels did you glue in this way altogether?

A. I don't think I glued more than 60 or 80 in all.

X Q. 54. But you think you did glue 60 or 80 in all?

A. That's all; yes. We kept gluing some every year till we stopped, three or four years ago. We glued 60 or 80 in all, but some in each year.

X Q. 55. How can you fix the exact date when you first glued barrels in this way?

A. I can't fix it; I only guess at it. The reason I came to do it I sold dried glue to a party in New York, which I heard they afterwards sold for lining oil barrels, and as we had trouble with neat's-foot-oil barrels so I experimented myself with it in doing so.

X Q. 56. Was your experiment a success?

A. Yes; in summer after they were dried they were tight.

X Q. 57. Why did you not take some of your dry glue and melt it and pour it into the barrels?

A. Because it was handier for me to do so—use the liquid glue—and I should think better, too.

X Q. 58. Why was it handy?

167 A. It would take some soaking first if I used dry glue and then boil it.

X Q. 59. Why should you think it was better, too?

A. Liquid glue is more penetrating. Glue that has never been dried is more penetrating—free from all lumps.

X Q. 60. How long have you known that fact?

A. Since I commenced the manufacture of glue in this country.

X Q. 61. How did you find it out?

A. I experimented with it and found out that some glues were very hard to dissolve and would not dissolve at all, always remaining lumpy; also every glue would form some skins on the top of it which could hardly be removed every time it melted. As soon as one skin was removed the other formed as soon as the glue came in contact with the air.

X Q. 62. A fresh liquid glue is better for any purpose for which glue is useful than glue which has first been hardened and remelted, is it not?

A. It is; provided you can remove the water out of the liquid glue in the same proportion as you had the water in the dry glue remelted.

X Q. 63. That is, if the liquid glue is of the same thickness it is better than when made from dried glue?

A. Yes, sir.

X Q. 64. Had you before you glued these barrels with liquid glue ever heard that any one else had glued barrels with glue that had never been dried?

A. I never heard of it.

X Q. 65. Where was your factory when you first glued these barrels?

A. At Yonkers.

X Q. 66. In the same place it is now?

A. In the same factory.

X Q. 67. Do not your books show when you first sold neat's-foot oil made at that factory?

A. I have no more books at all of that date.

X Q. 68. What has become of them?

A. We do mostly cash business and they were destroyed.

168 X Q. 69. Haven't you any written memorandum which would enable you to tell when you bought all these cattle feet?

A. Not a single thing, but I can prove the fact by the persons of whom I bought them.

X Q. 70. What were those persons' names?

A. One is A. Bersinger, of White Plains—a tanner of White Plains; the other is Henry Lauder; he collects cattle feet, hides, and such things. He is at Dobbs Ferry. They both are still alive.

X Q. 71. To whom did you sell this neat's-foot oil in these barrels?

A. E. Cumming, formerly at 276 Pearl street; W. Zinsser & Co., 179 William street; Welsh, Holmes & Clark, in West street, near Christopher.

X Q. 72. Who is there in your employ now or now living that helped you glue these barrels?

A. I don't think there is any one living. Edward Foley died some years ago.

Plaintiff's counsel now adjourns the examination of the witness until Saturday at 2 p. m.

Defendant's counsel desires to put on record the following statement: It is now a quarter of 5 and he desires especially to continue the cross-examination of the witness so far as it relates to the gluing by the witness of oil barrels with glue, and protests against the adjournment of the cross-examination at this time and in this manner.

Complainant's counsel states that he has an appointment at 5 o'clock which he must keep, and after the close of witness's direct examination he waited nearly three-quarters of an hour for the defendant's counsel to cross-examine him; that the loss of time is due to defendant's counsel.

169 Defendant's counsel states and offers now to continue the cross-examination in the presence of Mr. Leggett, who is here present, and to reserve to the plaintiff's counsel all opportunity hereafter to object to questions and answers.

Complainant's counsel does not accept the offer, deeming it his duty to be present at the examination.

Defendant's counsel again protests against this adjournment and calls attention to the fact that during the time within which plaintiff's counsel has remained here and put these minutes on the record he could have finished the cross-examination on the particular point in examination, and is ready now to finish the cross-examination on that point in 15 minutes, and plaintiff's counsel declines to allow the examination to go on farther.

2.30 P. M., SATURDAY, *April* 14.

Cross-examination resumed:

X Q. 73. What persons are now in your employ at the glue factory?

A. I have got 4 persons.

X Q. 74. What are their names and how long have each been with you?

A. One is my son Oscar, who has been with me 5 years; the other one is Patrick Keating, about 6 years; the other one is called "John;" I forget his other name; has been with me about 3 to 4 years; Carman, been with me 5 years.

X Q. 75. Can you give me the names of any persons who were with you between 1870 and 1874?

A. Edward Foley, who is now dead; Patrick Keating, the father

of the other Patrick, also dead. I employed some other help,
170 but they are all gone. I don't remember their names, there were so many there.

X Q. 76. Have you made any examination or thought of the question further so as to enable you to state more definitely when you lined the barrels with glue?

A. I have.

X Q. 77. What examination have you made?

A. I have seen Mr. Geo. B. Ritchie, who was clerk to Mr. Cumming, now dead, and he stated that it was now 8 years since he left Mr. Cumming and lining of those barrels could only be between 2 or 3 years before he left Mr. Cumming.

X Q. 78. Did you make any other examination?

A. That is all the examination I made.

X Q. 79. Talk to anybody else about it?

A. Nobody.

X Q. 80. Not with Mr. Felt, or Mr. Leggett, or Mr. Reed?

A. No; I have not.

X Q. 81. Have you ever been threatened with suit by Mr. Leggett for lining these barrels with glue?

A. Never. I guess he didn't know it.

X Q. 82. What other uses have you ever made of glue?

A. Done some experimenting; that's all that I remember.

X Q. 83. What grades of glue do you make?

A. Cabinet and piano-forte glue; also white glues.

X Q. 84. What other kinds of glue are there in the market?

A. Inferior and imported glues and some higher grades yet; some white glues.

X Q. 85. What are the different prices to-day for the different grades in the market?

A. I hardly can tell, but I understand from 8 to 30 cents per lb.

X Q. 86. What's the price of your glue to-day?

A. 14 to 22 cents per lb.

X Q. 87. What do you get for your cabinet glue?

A. 14 to 18 for my cabinet and piano-forte glue; white glues are higher.

171 X Q. 88. What kind of glues can you get for 8 and 10 cents?

A. Foot-water glues and hide glues of inferior manufacture.

X Q. 89. What are these lower-grade glues used for?

A. Generally sizing.

X Q. 90. What is sizing?

A. Stiffening for wool, fabrics, cotton, and paper.

X Q. 91. How are these inferior glues manufactured?

A. They are manufactured from butcher bones partly, and the glue water so made evaporated. The glue does not come from the bones; it comes from the sinews around the bones.

X Q. 92. How are the inferior hide glues made?

A. They are made in the same way as the other glues, except that they are less expensively treated. Instead of a certain length of

liming, the time is reduced; otherwise the boiling and washing would be the same.

X Q. 93. Did you ever make any of these inferior hide glues?

A. Yes, sir.

X Q. 94. Did they stick?

A. They did.

X Q. 95. What did you get a pound for them?

A. 16 to 18 cents.

X Q. 96. When was this?

A. Some time ago, some six or eight years; glue was a good deal higher then.

X Q. 97. What would such glues be worth now?

A. About 10 to 12 cents.

X Q. 98. Did you ever make any glue from prepared stock that had already been limed and washed?

A. I never have.

X Q. 99. Have you never bought such stock?

A. Yes; I have.

X Q. 100. How long ago?

A. About three years ago.

X Q. 101. How long have you known such kinds of stock for sale in the market?

A. I can't tell.

X Q. 102. A long time?

A. It is not a regular grade in the market. I remember once seeing a lot from Cuba about three years ago.

172 X Q. 103. You never used it yourself?

A. I used some of it. I re-treated it. I didn't trust it. It was too risky.

X Q. 104. Is there any other object in liming or washing stock than to get it clean?

A. Certainly.

X Q. 105. What other object?

A. First is to dissolve it quicker with using less heat, the shorter and least time it dissolves the better the glue, and also as bleaching purposes; white glues are all highly limed.

X Q. 106. How much longer does it take to boil stock that hasn't been limed?

A. It will take 24 hours at least to dissolve it all—that is, from hides or skins.

X Q. 107. Did you ever try this?

A. Yes.

X Q. 108. With what result?

A. Just as I said.

X Q. 109. How long did it take them to boil the glue out?

A. We couldn't finish it in one day and night because there was some stock left. We had to go about it a second day.

X Q. 110. What kind of stock was it that took so long to boil?

A. Raw-skin stock.

X Q. 111. Where had you got it?

A. Got it in a yard in New York.

X Q. 111½. Was it dry stock or wet stock?
A. Dry.
X Q. 112. Did you soak it before you boiled it?
A. I did not.
X Q. 113. How much of it did you have?
A. About a ton.
X Q. 114. Did you make it all up into glue?
A. Into size, not into glue.
X Q. 115. Had it ever been limed?
A. No.
X Q. 116. Did you lime it?
A. No; stock was in such a condition it couldn't be limed.
X Q. 117. Did you treat it with acid in any way?
A. I did not.
X Q. 118. Did you do anything with it except put it in the kettle and boil it?
A. That's all.
173 X Q. 119. What kind of a kettle and what kind of a fire did you have?
A. We boiled it in wooden tanks with steam coils.
X Q. 120. When was this?
A. I couldn't tell. It must have been 15 to 18 years ago.
X Q. 121. Why couldn't this stock be limed?
A. It was in such small parts as $\frac{1}{32}$ of an inch, so that it would be all lost by washing and liming.
X Q. 122. How long did it take you to work up this ton?
A. Boiled it up in three different boilings.
X Q. 123. How much size did you make out of it?
A. About 2,000 lbs.
X Q. 124. What did you do with the size?
A. I sold it to a carpet factory.
X Q. 125. What is the difference between size and liquid glue?
A. We call it size when it's highly evaporated.
X Q. 126. Is size more highly evaporated than liquid glue?
A. Liquid glue is that as it just runs out of the kettle as we draw it off after boiling. Size is evaporated liquid glue.
X Q. 127. Was this 2,000 lbs. of size you made evaporated after it was drawn out of the kettle?
A. Yes; to a certain extent.
X Q. 128. To what extent?
A. We removed about 25 per cent. of water.
X Q. 129. How much water did you still leave in it?
A. 80 per cent.—75 per cent.; can't tell exactly; can't measure that.
X Q. 130. Did this size make a stiff jelly?
A. Very stiff.
X Q. 131. If you had taken this size and cut it up in slices and dried it would it have made dried glue?
A. Yes; it would.
X Q. 132. Would the glue have been of good or poor quality?
A. Poor quality.

X Q. 133. What would such glue be worth a lb. to-day?

A. 6 to 8 cents.

174 X Q. 134. How did the amount of water in this size, as you sold it, compare with the amount of water in your ordinary jelly glue as you begin to dry it?

A. About the same.

X Q. 135. How long have you been making size for sale in your business?

A. Only experimenting only for a very short period.

X Q. 136. Had you ever made any before this lot?

A. No.

X Q. 137. Have you ever made any since?

A. No.

X Q. 138. What did you get per lb. for this size?

A. 2 cents per lb.

X Q. 139. What would it have been worth per lb. if you had dried it?

A. I think I got 4 cents a lb. for the size at that time.

X Q. 140. And the dried glue about how much?

A. About 14 or 15 cents per lb. if I had dried it and sold it as dried glue.

X Q. 141. What other experience have you ever had in boiling stock which has never been limed—which has caused you to testify that limed stock can be boiled more quickly than unlimed stock?

A. I don't understand the question exactly.

X Q. 142. Have you ever at any other time tried to make glue from stock that had never been limed and without yourself liming it?

A. I don't remember that I ever had.

X Q. 143. Do you, in your business, press the water out from the stock that has been washed and limed before putting it into the glue kettle?

A. No; but we press it when it is in the kettle, so as to get out all the water we can.

X Q. 144. Do you use evaporating pans always in making your glue?

A. I do.

X Q. 145. How long have you done so?

A. About 14 or 15 years at least.

X Q. 146. What is the object of evaporating pans?

175 A. It is to dry the glue quicker and remove it from the danger of atmospheric change.

X Q. 147. How did you get the water out of the glue before you used the evaporating pans?

A. By the open-air drying process.

X Q. 148. Do you cook the glue in the glue kettle now as long as you used to before you used the evaporating pans?

A. Yes; just the same.

X Q. 149. How can you tell when it is boiled enough?

A. We have a testing apparatus, and have had for twenty years; before that we used our judgment.

X Q. 150. Is this testing apparatus what is called a hydrometer?

A. Something similar.

X Q. 151. What does it show?

A. The percentage of water in the glue; it would not show the strength or elasticity; it only shows the consistency.

X Q. 152. What amount of water is there in your glue as you draw it off?

A. It very often differs, from the different stock we use; it runs from about 90 to 80 per cent. water.

X Q. 153. And this was just the same before you used the evaporating pan?

A. Yes, sir.

X Q. 154. Will such glue when cold make a good, stiff jelly?

A. Yes, sir; it will.

X Q. 155. Did you use to take such jelly and cut it in slices and make your dry glue from it?

A. Yes; we did.

X Q. 156. When you finish evaporating the water from your glue from the evaporating pans, what is the percentage of water still left?

A. About 65 water and 35 glue.

X Q. 157. And then you cut that up in slices and dry it as before?

A. Yes.

X Q. 158. What is the heat at which you evaporate the glue?

A. From 125 to 140°.

X Q. 159. How long will a barrel of your liquid glue, as it first runs from the glue kettle, keep—say in the month of April?

176 A. Well, my glue—that's a question I couldn't answer; do you mean a barre- of glue being put in without cooling—boiling point or less?

X Q. 160. I mean how long would it keep if you put it in a barrel in a way that it would keep longest?

A. If it's cooled off by alum 40 to 50° before it's put into the barrel under the same temperature it might keep 3 or 4 weeks.

X Q. 161. All sweet and good, so that it could afterwards be sliced up and dried?

A. Yes, sir.

X Q. 162. At what temperature would you have it put into the barrel so as to keep the longest?

A. About 35 Fahr.

X Q. 163. How long would it keep if it was put in at the ordinary temperature of the air, say 60°?

A. About 2 weeks.

X Q. 164. Will the liquid glue or jelly or size that contains only sixty-five per cent. of water keep longer than that which contains eighty or ninety per cent. of water, all other things being equal?

A. It will.

X Q. 165. How much longer?

A. I couldn't tell that.

X Q. 166. Twice as long?

A. Might possibly be.

X Q. 167. Is there much less danger of spoiling the glue when drying if the glue before it is cut into slices is reduced down so that it only contains sixty-five per cent. of water?

A. Yes; particularly in warm weather.

X Q. 168. Is there any object or purpose that you know of in reducing glue to the dry state except to get it into a condition where it will keep better and where it will be easier and cheaper to transport it?

A. Not that I know of.

X Q. 169. So far as you know or have ever heard is glue that has once been dried and then afterwards reduced to a liquid state better for any purposes of use than liquid glue which has never
177 been dried and which contains the same proportion of water?

A. No; it is not. You mean if dry glue is dissolved with the same amount of water as liquid glue would contain? The dry glue so dissolved is not better, but even liquid glue might be preferable.

X Q. 170. You mean liquid glue containing the same proportion of water?

A. Yes.

X Q. 171. What proportion of water does the glue contain in the condition cabinet-makers or piano-forte makers use it after they have dissolved it?

A. They use one to four or five barrels of water.

X Q. 172. They use glue in about the same consistency as you draw from the vacuum pan?

A. No; I think that would be too thin. They use it about as I draw it from vacuum pan.

X Q. 173. Would this glue, as you draw it from the vacuum pan, be in every respect in good condition for the cabinet maker or the piano-forte maker to put it into immediate use if he was ready then to use it?

A. I should think it would.

X Q. 174. Did you ever sell glue in this condition to cabinet-makers or piano-forte makers?

A. I never did.

X Q. 175. You always sell it to them in the dry state?

A. Dry state? Yes.

X Q. 176. Do you dry your glue by the natural air or artificial heat?

A. We dry it both ways.

X Q. 177. And both ways give good results?

A. The safest way is artificial heat.

X Q. 178. What proportion of the glue you make is spoiled in drying?

A. Not ten or fifteen per cent.

X Q. 179. Did you use to lose more before you had the vacuum pans?

A. Yes, sir.

X Q. 180. What manufacturers in the United States make the lower grades of glue?

A. Those who generally use cattle feet and those who use butcher bones and fertilizers, or I could say those that use common
178 tanners' scraps, which is generally considered inferior material—tanners' scraps, fleshings, etc., which is considered inferior material.

X Q. 181. How do you get the fat or grease out of the glue kettle?

A. High liming destroys most of it. What is remaining can easily be skimmed off while in the kettle.

X Q. 182. Do you employ any other means to get the grease off or free from the glue than liming the stock before it goes into the kettle and skimming the grease off while it is in the kettle?

A. I do not.

X Q. 183. Does the grease all rise to the top while the stock is boiling in the kettle?

A. It will at the first stage of boiling.

X Q. 184. And is that the time you skim it off?

A. Yes, sir.

X Q. 185. You don't put any chemicals into the kettle to get rid of the grease and never have, have you?

A. No.

X Q. 186. Have you often visited the factories of other glue manufacturers?

A. I have not.

X Q. 187. Do you know much about the processes they use?

A. I do not.

X Q. 188. Is not the glue that you make about the best and highest-priced glue made in the United States?

A. They say it is.

X Q. 189. And you think so, don't you?

A. I do. I never had any complaints. It is considered as good as Peter Cooper's, and his is considered the best in the United States.

Redirect:

R. D. Q. 190. How many years ago did you now say it was when you first lined the inside of your neat's-foot-oil barrels with your liquid glue?

A. I can't tell the exact time, but it can't be over ten, eleven, or twelve years ago.

179 R. D. Q. 191. How many years ago was it when the inside of barrels were lined with glue—either liquid glue or dry glue dissolved?

A. About thirteen, fourteen, or fifteen years ago.

R. D. Q. 192. And how did you understand that those barrels were lined—dry glue or liquid glue?

A. Dry glue.

R. D. Q. 193. You have testified on your cross-examination in reference to the manufacture of inferior glues. In your opinion

will such glues make a serviceable lining to the inside of oil barrels?

A. I should think it would not.

R. D. Q. 194. Why not?

A. I should think not, nor for anything where strength is required.

R. D. Q. 195. Is strength required in glue in lining oil barrels?

A. I should think so, as far as I know.

R. D. Q. 196. You have testified on your cross-examination to using stock which had not been limed and which was in very small pieces. What kind of glue did it make?

A. Well, for what purpose?

R. D. Q. 197. For the purpose of lining the inside of oil barrels.

A. It wouldn't be suitable at all, because it wouldn't dry in the barrel if the temperature was above 60 degrees.

R. D. Q. 198. Does it require a glue that will remain dry at a higher temperature than that to form a serviceable lining for oil barrels?

A. Yes. It requires a great deal better glue.

R. D. Q. 199. If you put hot glue in a barrel and bung it up how long will it keep?

A. Spoil over night; would decompose by the next day. The best prepared glue would smell.

R. D. Q. 200. What part of the manufacture of glue requires the most care and is the most precarious in the manufacture?

A. The risky part of the manufacture of glue is, first, the liming and, second, to remove all lime or other chemical substance.

180 R. D. Q. 201. Is there any other part of the manufacture which requires especial care?

A. Next there's the drying process.

R. D. Q. 202. What do you require to look after in the drying process?

A. Main part is pure dry air.

R. D. Q. 203. Does glue spoil in the drying?

A. Certainly.

R. D. Q. 204. From what?

A. From heat and dampness.

R. D. Q. 205. Is it necessary to get rid of all the grease or fat in the stock in order to make good glue?

A. Yes; it is necessary as much as possible.

R. D. Q. 206. What do you consider the cost per lb. of making the dry glue from the liquid glue?

A. Artificially 1½c. per lb., and for the natural air 3c. average per lb., including the losses.

Recross by Mr. BEAMAN:

R. X Q. 207. You have been asked in the course of your examination various questions about "good glue." What do you mean by good glue? Is it such quality as you are making and selling?

A. Yes, sir.

R. X Q. 208. Do you call any glues good glues that are inferior in quality to such glues as you are making and selling?

A. I do.

R. X Q. 209. What is the lowest price at which to-day you can buy in the market what you call good dry glue?

A. From 12c. up.

R. X Q. 210. Are none of the glues from 12c. down what you would call good glue?

A. It would not be serviceable for the purposes where my glue is used—that is, cabinet and piano work.

R. X Q. 211. Would none of the glue below 12c. be serviceable for gluing oil barrels?

A. I don't think it would be the cheapest, as such glue would not stand the amount of water as better grades would.

181 R. X Q. 212. Question repeated, and consider the word "serviceable" in the same sense as it has been used before by Mr. Felt in his question—that is, would none of the glue below 12c. be serviceable for gluing oil barrels?

A. It might be, and still more expensive.

R. X Q. 213. Do you think it would or would not be serviceable?

A. It might and it might not.

R. X Q. 214. Can you tell whether it would be or would not?

A. If I see the glue and make the test of it; not otherwise.

R. X Q. 215. Have you ever seen any oil barrels glued except those you yourself glued?

A. I never have.

R. X Q. 216. Do you not know that the purpose of gluing oil barrels with glue is not to have a glue that sticks the staves together, but simply to put a covering on the inside of the barrel which prevents the oil from leaking, not only between the staves, but through the wood, and that it is the custom to fill oil barrels so lined with glue before the glue becomes dried, so that the glue may not become dry, but may be prevented from drying?

A. I know that this is so, that the barrel- should be filled only when they reach a certain state of dryness

R. X Q. 217. Why is it best not to let the glue get too dry in the barrel?

A. The glue would contract.

R. X Q. 218. What harm would that do?

A. The glue would contract and form cracks and allow the oil to run through.

R. X Q. 219. And after the oil is poured into the barrel it keeps the glue soft and prevents it from drying and contracting?

A. Yes.

R. X Q. 220. So that in an oil barrel filled at the proper time the glue is never allowed to dry and become hard?

A. Yes; that's so.

R. X Q. 221. Is there any part of the glue business from the time you buy your stock until you sell your dried glue when it is
182 not important to take great care if you want to produce the best product at the cheapest price and make the most profit?

A. Only in the last stages of drying, when all but 5 or 10 per cent. of water is evaporated.

CHARLES WIEDERHOLD.

Circuit Court of the United States, Southern District of New York.

EDWARD W. LEGGETT
vs.
THE STANDARD OIL COMPANY.

Evidence for Complainant in Rebuttal.

Taken pursuant to the sixty-seventh rule of the Supreme Court of the United States in equity, as amended, before me, J. Henry Taylor, examiner U. S. circuit court.

LEXINGTON, MASS., *April* 20, 1888.

Met pursuant to notice.

Present: Samuel C. Reed, Esq., of counsel for complainant; C. C. Beaman, Esq., of counsel for defendant.

Deposition of WILLIAM PLUMER, recalled.

183 Direct examination by SAMUEL C. REED, Esq., of counsel for complainant:

Int. 1. Mr. Plumer, you have previously testified in this suit in behalf of complainant?

A. I have.

Int. 2. Where were you educated?

A. I am a graduate of Harvard college, class of 1845.

Int. 3. While in college what attention did you give to the subject of chemistry, and what attention have you since given to the subject of glue manufacture?

A. While in college chemistry was my favorite study. I belonged to a club called the Sir Humphrey Davy club. I spent all my leisure evenings experimenting in the room or laboratory of this club. I gave special attention to chemistry, expecting to study for a physician. I did, in fact, attend a course of medical lectures at Massachusetts medical college, but, my father desiring me to be a lawyer, I took my degrees at the Cambridge law school. From the time of my graduation to the present I kept up my interest in chemistry, and, so far as possible, have read all the works of the new discoveries on the subject; also have taken chemical journals. Prior to 1870, while an officer of the internal revenue, I was called upon to visit the various glue manufactories in Massachusetts, and from these examinations became interested in the manufacture of glue and determined to be engaged in the business. I obtained all the works I could find, either in the public library at Boston, or elsewhere, and thoroughly read up or investigated the subject for some two years or more. In 1869 or 1870—I am not positive which—I bought an interest in a glue factory at Woburn, Massachusetts, and there manu-

factured glue under the instructions of one Isaac Rich, who had been the chemical employé of Peter Cooper. Mr. Rich was
184 a practical glue-maker and thoroughly acquainted with the glue manufacture—the most thoroughly acquainted with it I ever met. We had a little experimental tub and were daily engaged in making experiments and writing down the results. From that time until I left the business, the last of 1874 or first of 1875, I continued these experiments and read all the different works and patents of the French and English that I could obtain, so I consider myself an expert.

Int. 4. You stated in your previous examination that you had had from six to eight years' experience in the manufacture of glue; that you had glued for the defendant from May, 1874, until the fall of that year, in Cleveland, from 4,000 to 6,000 oil barrels daily, making the glue for that purpose. Had you also at other places manufactured glue; and, if so, in how large quantities?

A. When I went out to Cleveland and while at Cleveland I was interested in the manufacture of glue at Gloucester, Mass. We made hundreds of barrels; can't give the number of pounds. We manufactured every day, so we dried artificially.

Int. 5. Please state the different steps practiced by you in the manufacture of glue both where wet and dry stock were used.

A. Both the wet and dried stock is first thoroughly soaked and washed in cold water. It is then put into lime pits, where it is turned several times and allowed to remain until the greasy matter has been saponified and the stock is thoroughly softened and the tissues somewhat broken up. It is then taken from the pits, thoroughly washed until all the lime or alkali has been removed, and this is shown by the use of litmus paper. If any traces of lime remain it is treated to a bath of weak sulphuric acid, again washed and tested by the litmus paper. If all acid and alkali has
185 been removed the stock is placed in the glue tub, allowed to drain, when heat is applied by the use of a steam coil. As soon as the stock or part of it is melted, forming a glue of sufficient density, it is at once drawn off into a settling tub. Free steam is then applied and a second boiling takes place, which is usually sufficient to liquify all the stock. This is also run into the settling vats.

Int. 6. Are all these steps in the manufacture which you have detailed, in your opinion, necessary to make serviceable glue?

Objected to as leading.

A. They are, for the following reasons: By first washing and soaking the stock it will more readily take up the lime water; by liming it the grease is saponified and the stock put into a condition to more readily and evenly dissolve. The lime and alkali must necessarily be completely removed or the glue would be comparatively worthless. I have given my process, and that's why I did it.

Int. 7. Please state the different kinds of stock which are used for making glue, first stating what is dry stock and what is wet stock.

A. Dry stock consists of trimmings of hides—South American clippings, they are called; buffalo pieces, and, in fact, any pieces of

green hides; tanners' stock which has been partially limed; wet stock, which may be tanners' stock; partially limed or salted green stock—stock that has never been limed. I mean by that——

Int. 8. What are tanners' scraps, commonly so called?

A. First, the best is trimmings from hides after they have been limed. The tanners, after they take the hides out of the lime pits, trim off some of the trimmings at the legs, etc.—I don't know as I can define them—pieces not fit to make leather. A second quality is called fleshings and skivings. These are the scrapings
186 from the inside of the hides when put upon the dressing beam. This last is poor kind of stock; not worth using. The first kind is good glue stock after it has been properly prepared.

Int. 9. Have tanners' scraps always been treated with lime, and when received do they always contain lime?

Objected to as leading.

A. I have bought hundreds of tons for myself and the Standard Oil Company and seen besides large stocks of it, and I never yet saw any of it that didn't contain lime. All that I bought and all that I have seen contained more or less lime.

Int. 10. In your opinion can glue, serviceable for the lining of oil barrels, be made from tanners' scraps by putting them into a kettle, adding water to them, and boiling them without first removing this lime?

A. Decidedly not, for the reasons, first, that all the lime in the stock would remain in the solution, which would destroy its tenacity and render it unfit for the purpose; second, that the stock, not being properly limed, would not dissolve readily and would consequently require an excessive heat, which would convert it into gum rather than glue, and thus render it entirely unfit for gluing barrels or for any object where glue is used for adhesive purposes.

Int. 11. Can glue be made from hoofs?

A. Neither from hoofs or hair.

Int. 12. Can you make any glue from pieces of leather?

A. I have made, by using a chemical process, a substance having the nature of glue, but more resembling gum, from leather, but it would be worthless for gluing barrels or adhesive purposes.

Int. 13. Ransom H. Sargent, a witness for the defendant,
187 has testified (folio 35) that he took tanners' scraps, consisting of dried pieces of hides, odds and ends of hides and hoofs, and put them into a cauldron kettle just as they came from the tannery without treating them in any way, either with lime or acid, and without removing the lime that was in them and boiled them a day, and with the glue he so obtained he lined his oil barrels; now, what kind of a glue would he get by the means he used and would it have made a serviceable lining for the inside of oil barrels; and, if not, why not?

A. I should say positively he would obtain gum rather than glue. I should say it would not make a serviceable lining for the reasons, first, that it necessarily contained a large quantity of lime or alkali; second, from the excessive heat caused by direct fire under the

kettle and the length of time used, it would necessarily destroy the texture of the glue, converting it into a substance resembling gum, having little or no adhesive properties.

Int. 14. If he had added to this boiling plaster of Paris, as he says he did (folio 55), what effect would that have?

A. If his product had been good glue even and he had added sufficient plaster to have set, he would have absolutely destroyed its utility. If he had added a smaller quantity, supposing the glue to be good, he would have seriously injured it, as plaster is not impervious to oil and is very porous. There might have been other chemical effects on the glue all injurious.

Int. 15. If he had boiled these tanners' scraps six, eight, or twelve hours, what would have been the result, and would the resulting product have made a serviceable lining for oil barrels?

A. As I have stated before, long and continuous and excessive boiling destroys the adhesive properties of the glue, converting it into the nature of gum.

188 Int. 16. What length of time, in your opinion, should tanners' scraps, after being properly limed and subsequently having the lime removed, be boiled to make serviceable glue?

A. This depends somewhat on the nature of the stock. Young cattle stock, like calves' trimmings, is always much more readily dissolved than cattle stock and thick pieces of hides; but the average time after the stock has been brought to the boiling point would be not far from two hours, when the first draining would be run off. The second draining is drawn off on an average in an hour and a half later.

Int. 17. Mr. Sargent, a witness for the defendant before mentioned, also testified (folio 36) that if one coating of the lining of the oil barrel did not answer he put on a second. What would be the effect of that?

A. If he put in, as he stated, boiling glue, it is perfectly absurd, for the second application would boil off the first and the result would have been the same as one application, only a larger quantity of glue being used in the barrel.

Int. 18. He also says (folio 37) that after he lined the oil barrels with the glue he had made he let them dry and filled them with oil. What effect would the drying of them have before putting in the oil?

A. I don't understand distinctly what he means by saying he let the glue dry, for in warm weather glue allowed to remain in the barrel even with the bung out would decompose nine times out of ten before it would dry and would be absolutely unfit for any purpose; the spores of fermentation, having once started, would extend all over the whole surface of the coating. No substance will dry except exposed to currents of air, and I should very much doubt if gelatine could be dried even in a barrel kept closed before decomposition would take place. If the glue did dry in hand-

189 ling or transporting the barrel you would crack the glue and render it worthless.

Int. 19. The same witness further gives, on folio 48, the prices he

paid for his tanners' scraps: January 28, 1863, 60 cents; February 9, 1863, 45 cents; March 4, 1863, 45 cents; August 19, 1863, 78 cents. What amount of glue with this amount of scraps treated in the way he says he did could he have obtained from them?

A. I have no means of judging how many pounds of scraps were used except based on the prices paid; if stock was worth from 4 to 6 cents per pound and this was clean, dried stock, meaning by dry stock not to contain more than 10 per cent. of water, I should say he might have obtained from 20 to 25 pounds of glue or gum as the result.

Int. 20. Would it have been glue or gum in your opinion?

A. It would have been gum rather than glue and unfit for the purposes, as specified before.

Int. 21. He also says, folio 36, that he built a fire under the boiler to boil the scraps. What would be the effect of that?

A. As already stated, long-continued heat destroys the tenacity of the glue; direct fire under the kettle would produce more excessive heat than the use of steam.

Int. 22. Warren W. Green, a witness, testifying on behalf of the defendants, says, folio 165, that he obtained from a tannery scraps and pieces of hide, and on his cross-examination, folio 175, says they were cattle's feet, hides, and such stuff as he could gather up from farmers who had been butchering, and put them without liming them in any way and without washing out the lime into a kettle, built a fire around the kettle and boiled them six or twelve hours, and with the product he obtained from this boiling lined his oil barrels and sold them after being lined to the oil-refiners.

190 Now, by the means he used, could he in your opinion have made a serviceable lining for the inside of his oil barrels?

A. There would be the same objection as to the tanners' stock, as heretofore stated, why he could not. In regard to cattle's feet obtained from farmers there would have been a large quantity of neat's-foot oil extracted, and unless removed would have seriously affected his product. Then he could not have boiled down these feet without excessive heat, which would have destroyed the glue. We made barrels of neat's-foot oil at our factory at Woburn and I thoroughly understand the process of treating cattle's feet. The glue obtained from this stock is of poor quality and was always sold by us as an inferior article.

Int. 23. Complainant's counsel reads further from the testimony of Warren W. Green, folio 165, as follows: "Before it got cool we would turn the solution out, heat it, and take another barrel and repeat the operation." What, in your opinion, would be the effect of such reheating?

A. Even if the glue were originally good, every reheating will have a tendency to depreciate it if brought to a boiling point. This is a fact known to every practical and educated glueman.

Int. 24. Complainant's counsel reads from the testimony of the same witness, cross-question 61, folio 180, "After you had lined the inside of the barrel and let the excess run out of the bung-hole, as you have stated, what next did you do?" And he answered that

question as follows: "We lay them aside and let them lay a day or two till this substance became hard and then resold them to teamsters or took them to the creek. I had a good many teamsters on the road of my own." What would have been the result if he had let them lay aside a day or two, as he has stated?

191 A. Well, I don't know as in a single day or a day or two the coating would have decomposed, but the question of decomposition would depend somewhat on the season of the year and the temperature. As a rule I should say they could be safely kept for a day or two if the lining was good glue.

Int. 25. William H. Abbott, another witness who testifies for the defendant, says, at folio 201, also 215 and 216, that he took 3 bushels of tanners' scraps, rawhide, put them into a kettle and boiled them without ever having relimed them or washed from them the lime then in them, and with the resulting product from the boiling of these three bushels of tanners' scraps he lined 200 oil barrels. What, in your opinion, would the kind of glue be that he obtained in this way, and could it have made a serviceable lining for the inside of 200 oil barrels; and if not of 200, of how many?

Question objected to as not correctly stating the witness' testimony.

Complainant's counsel, in reply to the objection of defendant's counsel, reads from the testimony of said Abbott as follows: Cross-question 3, folio 215, "What did you do with the scraps before you put them in the kettle? A. Nothing; simply put them in the kettle, put water on them, and boiled them."

A. It would not have been a serviceable lining for the reasons heretofore stated—that is, the product would contain lime, and if boiled by direct heat must have been injured by the excessive heat. Even if the glue had been properly made three bushels of tanners' stock never would have produced a sufficient quantity to line 200 barrels. Such a statement is simply absurd. I don't think it would have lined any successfully. I should say it would take about a quarter of a pound of good glue to properly line each barrel.

192 Int. 26. How many pounds of good glue—that is, serviceable glue for the lining of oil barrels—could, in your opinion, be obtained from three bushels of tanners' scraps made under the most favorable circumstances?

A. That depends largely upon the quality of the tanners' stock, whether pieces of hides or skivings and fleshings, whether wet or dry. If it were good dry stock it would yield from 50 to 75 per cent. of glue if properly treated. I should think you could get from 25 to 30 pounds of dried glue from 3 bushels if made under the most favorable circumstances.

Int. 27. The same witness, Abbott, further testifies, folio 202, that after he had thus lined in the month of May these 200 barrels he wagoned them across the country 88 miles from Newton Falls, Ohio, to Titusville, Pa., and that at the latter place, in the month of June, he filled them with oil, then wagoned them, folio 211, 22 miles to Union Mills, and from there, folio 202, he shipped them to New

York by rail, and that the lining was perfect, and that there was no leakage of oil from the barrels. Now, will you please state whether, in your opinion, this was possible; and, if not, why not?

A. I should say it was not possible, for the following reasons: First, that the glue would have decomposed before that time in all probability; second, that the long journey, even if decomposition had not taken place, would have broken up the coatings in the barrels and rendered them unfit to hold oil even if good glue had been used.

Int. 28. He further testifies, folio 203, that these same 200 barrels made thirteen round trips from Titusville to New York, and that they always returned with the lining in good condition, folio 211. What, in your opinion, would have been the condition of the lining in those barrels after having made the thirteen trips as stated?

193 A. I should say decidedly that it would be impossible that they should be fit for use. I know, as a fact, that the Standard Oil Co. were accustomed, after having barrels returned to them after one using, to steam out the glue and reline the barrels again before using. They never trusted an old lined barrel.

Int. 29. What would have been the effect on the lining of those 200 barrels carried empty 88 miles, from Newton Falls, Ohio, to Titusville, Pa., across the country in wagons?

A. I should say the constant jarring would have a tendency to break the coating and start the staves and thus render them unfit for use, if all the other conditions had been satisfactory.

Int. 30. Complainant's counsel reads from the testimony of the above witness, Abbott, question 26, folio 211: "Did you ever have any trouble with those barrels? A. Sometimes a chime would break or the barrel would require a new stave. Q. 27. Did you have any trouble with the linings? A. We did not. The barrels went through without leaking." What would be the effect upon the lining of the oil barrel if a chime should break or a new stave were put in?

A. A chime might possibly break without injuring the lining, but the breakage of a stave would destroy the whole lining. The barrel would have to be taken to pieces and would need new gluing.

Int. 31. In answer to question 19, folio 208, the same witness further says that he was 10 days in lining these 200 barrels. What effect would that have upon the efficacy of the lining?

A. I should say that in the first barrels lined the lining would decompose before oil were put into it unless antiseptics were used.

Int. 32. He further says, folio 210, that in carrying these 200 barrels to Titusville, 88 miles across the country, after they

194 had been lined, in doing so they made two trips. What effect would that have upon the lining?

A. The same danger of decomposition, the certainty of decomposition, besides the breaking of the coating, because when decomposition commences the gelatine or jelly is exceedingly tender and liable to be broken.

Int. 33. Zadok Martin, another witness testifying for the defend-

ant, folio 231, says that when these barrels referred to by the last witness were returned from their trip to New York from Titusville, Pa., he would have his man drive down the hoops on them. What effect would that driving down the hoops have upon the lining of the barrels?

A. Even if the coating then was good it would have a tendency to destroy it; I don't think it possible to drive down the hoops without destroying the lining.

Int. 34. In your opinion, does glue enter the pores of the wood when applied to it?

A. Hot glue will readily enter into the pores if the wood be dry, and I understand that the staves of barrels are kiln-dried.

Int. 35. What, in your opinion, is the most precarious part of the manufacture of glue?

A. If the party manufacturing glue is a competent person and understands his business in preparing the stock and boiling it, drying it is the most precarious part, for the following reasons: It is liable to decompose while on the nets, to mildew, running through the nets, and is affected by every change in the weather. I remember a single case of Upton, the glue manufacturer in Massachusetts, who lost from 3,000 to 4,000 nets of glue by the glue falling through the nets, being a total loss. I don't know what effect thunder showers have on it, but have heard they did.

Int. 36. Considering the losses caused by the causes you
195 mention as well as the expense of drying it, what was the amount saved per pound of dried glue by using soup glue instead of dried glue, in your opinion, while you were in the employ of the Standard Oil Co., from May, 1874, to the fall of that year?

A. Taking into consideration the loss in drying the glue, which is always taken into consideration in making up the cost, and the market price of first quality glue, fit to line barrels, I should think it would average from 6 to 10 cents per pound.

Int. 37. Leaving out this question of saving, what other advantages are to be derived from using soup glue or glue that had never been dried over that of using glue that had been dried and had to be remelted before using?

A. Glue that has never been dried and therefore never reheated in melting is stronger and more tenacious, as every reheating deteriorates the quality of the glue.

Int. 38. Is liquid glue more peretrating, in your opinion, have more water of composition, and is it more blended with the water of composition, freer from any flakes which might be found in glue that was dried and then remelted, and better adapted for those reasons for the purpose of lining oil barrels?

Objected to as leading.

A. I don't know as liquid glue is more penetrating, but I believe it is better for such purpose of lining barrels, first, because it is stronger, never having been reheated; second, because it is perfectly fresh and never decomposed, as dried glue is liable to be in the process of drying.

Int. 39. Before you went into the employ of the defendant in January, 1874, had you ever seen an oil barrel lined with liquid glue or had you ever heard of one being so lined?

A. I never saw a barrel lined with glue before 8th of Janu-
196 ary, 1874, and only a short time before had my attention called to the fact that barrels were so lined.

Int. 40. In your answer to the second interrogatory on your previous examination you stated the time and circumstances attending your first entering into the service of the company defendant, your meeting in Cleveland with Mr. Flagler, one of the officers of the company defendant, your building a factory and subsequently making liquid glue for them, which glue, as you say, was subsequently used exclusively for gluing the inside of oil barrels. In answer to interrogatory 13 you stated that you visited the factory the first time January 8, 1874, in company with Mr. Flagler, and that on that first visit you were told, either by Mr. Flagler or Mr. Andrews, that one Leggett had a patent for making liquid glue, and that you were asked about it. Now, will you please give in detail, so far as you can, the conversation on that subject which you had with Mr. Flagler at that time?

Objected to as incompetent at this stage of the proceedings.

A. I visited with Mr. Flagler the works of the Standard Oil Company on January 4, 1874; was introduced by him to Mr. Andrews as general manager or superintendent of the works. Mr. Flagler and Mr. Andrews and myself visited the glue-room, and I was shown the whole process of gluing barrels. After having seen this process I was asked if I could manufacture a liquid glue which would answer for the purpose. Having tested the consistency of the glue with my fingers, I replied that I had not the slightest question on the point. It was during the time of the conversation with Mr. Flagler and Mr. Andrews, and Mr. Flagler, I think, said that one Leggett had a patent for manufacturing liquid glue and was desir-
ous of introducing his patent to the Standard Oil Company.
197 He asked if I thought my process would interfere with his patent. I replied that I had not seen Mr. Leggett's patent and had not heard of it and knew nothing about it; that I had nothing to do with any interference; that I simply knew I could make liquid glue. All this conversation was in the presence of Mr. Flagler and Mr. Andrews, both of them taking part in the questions.

Int. 41. State, if you please, what further was said at any other time by any other officer or officers of the Standard Oil Company with reference to Mr. Leggett's patent.

Same objection.

A. I don't remember that the question was ever discussed or mentioned again.

Int. 42. Did you ever have any conversation with the president, Mr. Rochefeller, about the Leggett patent?

Same objection.

A. I don't remember. I couldn't swear that I had.

Int. 43. Were there any doubts expressed by the officers of the company defendant as to whether the Leggett process could be successfully used; and, if so, what was said, and by whom?

Same objection.

A. Both Mr. Flagler and Mr. Andrews were very anxious to know if I was positive that I could make liquid glue that would answer their purpose, but nothing was said, so far as I remember, whether Mr. Leggett could make it.

Question being re-read:

I answered by stating whether I was positive that I could make liquid glue that would be satisfactory or that would answer
198 the purpose. I don't remember as they asked me whether Mr. Leggett could do so.

Int. 44. Did the officers of the company say to you when you visited their works and saw them lining oil barrels with dried glue remelted that this process was the one that had always been practised by them?

Objected to as leading.

A. In showing me the process of lining barrels I inquired how they prepared their glue. They answered that they took dried glue, remelted it, and brought it to a boiling point, and this was their usual method of doing it.

Adjourned, 1 to 2 p. m.

At 2 p. m. resumed.

Int. 45. When did the idea first occur to you that liquid glue could be used in place of dried glue remelted?

A. Some time prior—a few days or a week prior to 1st of November, 1873.

Int. 46. You have testified in your previous examination that you wrote a letter to Mr. Flagler Nov. 19, 1873. What did you say in that letter with reference to liquid glue being used instead of dried glue remelted?

Objected to, as the letter is in evidence and is the best evidence of its contents.

Question withdrawn.

Int. 47. In that letter you state that liquid glue could be used in place of dried glue remelted at a saving of half the cost of making dried glue remelted. You also state that you proposed to secure your discovery by letters patent and a trade-mark. Now, at
199 the time of your writing that letter had you heard that letters patent had been issued to Edward W. Leggett, bearing date October 21, 1873, numbered 143,770?

A. In that letter where I stated I proposed to secure letters patent or trade-mark for my discovery it had solely reference to elastic

glue, which I had been experimenting upon, and not simply to liquid glue used as suggested in my letter, as for the purpose of lining oil barrels. The letters patent and trade-mark had reference solely to elastic glue. I never had heard of Mr. Leggett or his patent until informed by Mr. Flagler and Mr. Andrews.

Int. 48. Then you did not at that time purpoee getting out a patent for lining oil barrels by the use of soup or liquid glue?

Objected to as leading.

A. I had no thoughts of such a thing.

Int. 49. Why not?

A. I knew nothing about the large demand for glue for oil barrels, and as there had been no demand for liquid glue in this vicinity I should not have thought it would pay.

Int. 50. When you arrived at Cleveland and saw the purposes to which liquid glue could be applied, did you or did you not change your mind with reference to the importance of the discovery?

A. I was perfectly astonished at the amount of glue that was required, and, as I stated in my letter of the 19th of November, 1873, I thought it would be more and more for the interest of the Standard Oil Co. to make their own glue.

Int. 51. After you had been in the employ of the Standard Oil Co. from the month of May, 1874, to the fall of that year, lining, as you say you did, from 4,000 to 6,000 oil barrels a day, and also with the experience and thought which you have had and have since given to the subject, what is now your opinion relative to the importance of Mr. Leggett's discovery and of its practical utility?

200

Objected to, as it *is* not been proved that Mr. Leggett made any discovery, nor has it been stated to the witness what the discovery is, nor has it appeared from the testimony that he is aware what it is.

A. From my experience while at Cleveland I was still strongly impressed with the importance of using liquid or soup glue in an economical point of view and obtaining glue better adapted for the purpose.

Int. 52. What salary did the Standard Oil Co. give you while in their employment?

A. Three thousand dollars a year, with the premise of a commission on all dried glue manufactured, it being understood that dried glue was to be manufactured in addition to the liquid glue, although none was ever made. The dried glue was to be sold to outside parties, and they were not going to dry it for their own use.

Int. 53. Had the process practiced by the defendant of coating their barrels with dried glue remelted been successful in preventing leakage; and, if not, what cases of loss do you remember?

A. I only remember one important case where there was great leakage. I was informed there was a leakage to an amount of $20,000 in a shipment to New York while I was building the factory. There was a dispute between Wiggin, the superintendent of

the barrel factory, and Hopper, the superintendent of the glue-room, as to who was responsible. They were both sent for and went to New York, and there was considerable trouble about it. How it was settled I don't know.

Answer objected to as hearsay.

201 I was told by Hopper and Wiggin both and by Mr. Andrews that there was a loss; it was the general talk in the whole yard; created a big excitement.

Int. 54. George H. Hopper, a witness testifying for the defendant, says (folio 98), when asked to describe the process of gluing the inside of barrels before you went to Cleveland, *answered* as follows: "We took the proper quantity of such dried glue and placed it in what we call a jacket kettle, added water to the same, and put the steam onto the kettle and heated it up to a certain temperature, at which time it was ready to apply to the inside of *of* the barrel." Was that the way that they were proceeding when you arrived?

A. It was not. There was not a jacketed kettle on the place when I went there, January 8, 1874; they had simple iron kettles or tanks with a steam coil circling around it on the inside. I told Mr. Andrews the best glue ever made would be spoiled by heating it in that method or greatly injure it. At my suggestion jacketed kettles were put in subsequently.

Int. 55. The same witness, in answer to question 27 (folio 90), which is as follows: "If I understand you, then, after the glue was made in tanks and kettles in which the scraps were boiled, the product was run into another kettle, where heat was applied and evaporation continued," answered, "Yes, sir." Was this done?

A. It was not. There were no evaporating tanks whatever; simply receiving or settling tubs for the strained glue, which was only kept warm enough to keep it in a liquid form, so that it could be pumped into the jacketed kettles in the glue-room.

Int. 56. The same witness, in reply to question 36 (folio 103), which is as follows: "Is there any difference in any way between the result in the use of the glue which has never been allowed to go into the hard state of commerce or in the use of the glue
202 such as has never been evaporated to that hardness," replies as follows: "No difference whatever, except, perhaps, what I have stated in the quality." In your opinion, is that so?

A. As I have said before, glue that has not been remelted is better and stronger. Then you can know from what stock the glue is made and, if proper care has been taken in manufacturing, that the glue is perfectly free from decomposition.

Int. 57. The same witness, in folio 119, when asked how he determined whether the glue that was put into the barrels was of the proper temperature or consistency, replied that it was the custom when they started in the morning to glue a few barrels and knock the heads out and look on the inside of the barrels for the purpose of seeing what the coating was. If it was too heavy they added water, if too thin they added a dried glue. Now, in your opinion, what would be the effect of adding dried glue?

A. Dried glue put into hot liquid takes a long time to dissolve, and I have doubts if it could be entirely dissolved during a whole day. I have tried such experiments myself and have never succeeded successfully. It would be partially dissolved. Prior to melting hard glue I always soak it in cold water some 24 hours, and then it dissolves easily.

Int. 58. The same witness says (folio 132), in reply to the question whether a hard glue and a liquid glue are one and the same thing, that if you introduce the same water that you have in the dry or gelatine glue you will have the same thing. Is that so?

A. I believe there is a chemical difference. Chemists, at least, claim that the water in composition added to dried glue is not the same as in the gelatine. The books so state.

203 Int. 59. Adrian Queru, a witness, testifying in behalf of the defendant, says (folio 143) that if the hide scraps had not been limed and had been boiled in the kettle that the glue would not be as white and would smell. Is there, in your opinion, any further difference?

A. As it would require a much longer time to extract the gelatine from unlimed stock, there would be the almost certain danger from long, excessive, and continuous heat, as before explained, and less gelatine would be obtained as a result.

Int. 60. Charles F. Chandler, a witness, testifying in behalf of the defendants, in reply to question 14, when asked if the treatment of glue stock with acid or lime was an essential part of the making of glue, replied, "It is not." What is your opinion on that subject other than you have given?

A. Both as regards the quality of the glue and the yield from the stock, I consider it absolutely necessary, and this opinion is concurred in by all glue-makers, such as Peter Cooper and others. Such is their universal practice. I have been in most all the glue factories in Massachusetts, and I know they all lime their stock thoroughly.

Int. 61. The same witness, when asked whether the reduction of dried glue to a liquid state was any more than the returning to that dried glue of the water that had before been in it and had been taken from it by evaporation, replied that it was not. Is it or is it not weakened by every successive heating?

A. I believe every successive reheating deteriorates the glue. I have no doubt on this point.

Int. 62. The same witness, Int. 29, was asked if he had read the testimony of Messrs. Sargent and Abbott and Green (all defendant's witnesses) and understood the process therein described of gluing barrels, and that the product they made and with which they

204 lined their barrels was glue. Have you read the depositions of these same persons, viz., Messrs. Sargent, Abbott, and Green, and do you agree with Mr. Chandler in his opinion?

A. I have. I do not. Every glue manufacturer who knows his business knows that the presence of lime in the gelatine and continued or excessive boiling will render the gelatine worthless for liming barrels or for adhesive purposes.

Int. 63. The same witness, when asked how long liquid jelly would keep fresh, replied that if it were poured hot into barrels and the barrels headed up it would keep a long time, and in the next interrogatory said that he had kept it for months in jelly form. Now, how long, in your opinion, would liquid glue keep, poured hot into a barrel and the barrel headed up?

A. The very fact that the glue was hot when poured into the barrel after the temperature was somewhat reduced would rapidly create fermentation. I have known jelly to ferment in 24 hours bottled up. I have known it to keep 48 hours. I do not believe it would have kept a month without the use of antiseptics.

Int. 64. Would it keep a week without the use of antiseptics, in your opinion?

A. In numerous experiments I have made I have never been able to keep it free from decomposition in warm weather for a week. I have recently, within 3 weeks, had a bottle in my conservatory corked tightly, and in less than a week, on opening it, the smell was exceedingly offensive.

Int. 65. How can you decide as to the quality of the glue in the dried state or in the jelly form?

A. In the dried state, first, by the smell, having slightly moistened it; second, by the fracture, the manner in which it breaks. If it breaks soggen or splintering off it shows good glue. If it breaks straight off not so good; third, by weighing the dried glue, placing it
205 for 24 hours in cold water, reweighing it to see how much water it has absorbed, the larger percentage of water it absorbs showing it to be the better glue; testing the tenacity of the gelatine and seeing what weight it will sustain without breaking. Liquid and gelatine glue is tested by the strength of the jelly it will form when cool or when in a liquid state by rubbing it in the fingers. The tenacity of it is tested in seeing what weight will crush it, the same as in jelly obtained from dried glue.

Int. 66. Can you tell, as to the elasticity of liquid glue, as to whether it is short or little or tenacious in a liquid form?

A. Simply by the touch of the fingers in a liquid form, which is a certain indication to a man of experience.

Cross-examination by C. C. BEAMAN, Esq., of counsel for defendant:

X Int. 67. From what did you make the bottle of glue you kept in your conservatory for a week?

A. I made it from what was bought as Peter Cooper's best quality of dried glue.

Witness produces some of the dried glue and explains its excellencies, calling attention particularly to the character of its fractures, which, he says, is one of the principal tests of good dried glue.

X Int. 68. What proportion of the glue used for general purposes is made from dried glue by remelting it?

A. Prior to 1874, I understood, so far as I know, that the whole product was from dried glue.

X Int. 69. Is glue dried for any purpose except to get it in a shape where it will keep and where it can be bought, sold, and shipped conveniently?

A. I have always understood that was the only object—to
206 have it in a dry, staple, merchantable form. I know of no other object of drying or dessic-ating it.

X Int. 70. Is dried glue that has been remelted and reduced to a certain consistency better for any purpose for which such glue would be used than the liquid glue or gelatine of the same consistency, assuming that the stock from which the glue was made is the same, and that the glue was made in the same way?

A. I know of no use where it would be better or even as good.

X Int. 71. Would it be better for ordinary joiners' work?

A. It would not. I know as *as* a fact that glue repeatedly remelted in the carpenter's glue pot or little jacketed kettle loses its strength. I have been told so often by cabinet-makers.

X Int. 72. Is this fact that reheating damages glue recognized not only in the books but by practical workmen?

A. It is certainly recognized in the books and by practical workmen, so far as I know. The very fact that they use jacketed kettles shows that they recognize that excessive heat will injure the glue.

X Int. 73. How long has this fact been recognized in the books?

A. I can't answer. I have seen it in divers books on chemistry as applied to the arts and sciences published prior to 1870, certainly, and the fact was well known to every intelligent glue-maker. Old man Rich, who worked with me and came from Peter Cooper's, used to dwell on the danger of excessive heatings and remeltings. I have known carpenters to use jacketed glue kettles as early as I can remember.

X Int. 74. Do not the carpenters or cabinet-makers frequently use glue that has been melted over and over again?

A. I have no doubt but that they do.

207 X Int. 75. Isn't the harm that is liable to come in reheating dried glue more from the danger from overheating it more than from simply reheating it?

A. The greater danger is from overheating, but every time it is brought to a boiling point it to a certain degree deteriorates.

X Int. 76. What is the boiling point of glue?

A. Substantially the same as water.

X Int. 77. Isn't it easy and practicable to remelt dried glue without bringing it to the boiling point?

A. It can be melted at a much less degree of temperature than at the boiling point, but as cabinet-makers want the glue sufficiently hot to penetrate into the pores of the wood and so that it should not immediately jelly on the joints they usually bring it to a boiling point. If put on cold it will jelly on the wood, and it is therefore necessary to bring it to the boiling point.

X Int. 78. Do cabinet-makers generally apply glue to wood at the boiling point?

A. I think that is the general custom, and I think sometimes they even heat up the wood.

X Int. 79. Then all the cabinet-work of the United States, so far as you know, is done by remelting dried glue to the boiling point and then applying it to the wood, is it not, and is not the great part of it done with glue that has been reheated over and over again?

A. As I understand, the general custom has heretofore been to use dried glue melted and applied hot, but the glue kettles are always made small so there will be no occasion to have many reheatings. Recently, I understand, liquid fish glue has largely been used by cabinet-makers.

(Adjourned to April 21, 1888, at 9 o'clock a. m.)

208 APRIL 21, 1888.

X Int. 80. At what consistency do cabinet-makers ordinarily use glue—that is, what proportion of water and what proportion of glue?

A. This depends very much upon the quality of the glue used. First quality glue will take up at least 80 per cent. of water, while other kinds might not take more than 50 or 60 per cent. The better the glue the more water it will take up.

X Int. 81. Does the cabinet-maker ordinarily add as much water as the glue he is using will take up?

A. Intelligent cabinet-makers always put their glue to soak in cold water for about 24 hours, allowing it to absorb as much water as it will take up. The surplus water is thrown away and the jelly put into the glue kettle. This is the best way of making glue, whether all cabinet-makers do it or not. All is made that way that I have seen prepared.

X Int. 82. So that glue as used by cabinet-makers, if good glue, contains about four parts water and one part glue?

A. Yes.

X Int. 83. When, as a glue-maker, you had your glue in jelly form cut in slices and ready to put upon the nets what proportion of water did it contain?

A. It depends again entirely on the quality of the stock used. From good stock good tenacious jelly was obtained, containing about 80 per cent of water; from poorer stock less per cent. of water, as in the case of the cabinet-makers' use of dried glue—adding water to dried glue. In other words, glue made from poor stock must have a denser gelatine than that made from good stock; otherwise it will not stand on the nets.

X Int. 84. So that in making glue, whatever the quality of the stock was, you, in the manufacture, reduced it to the same
209 proportions of water and glue before drying that the cabinet-maker reduced it to after drying?

A. I don't understand that question exactly.

X Int. 85. In your manufacture, as I understand you, the liquid glue or jelly which you made and which was ready to be cut into slices for drying contained the same proportions of water and glue that would be contained in the liquid glue made from the same dried

glue by skilful cabinet-makers, who took the dried glue that you had made and, adding water to it, reheated it?

A. Our process in making glue was to, as far as possible, use the same kind of stock in each separate boiling. After the stock had been wholly or partially melted down it was tested by the fingers and also by forming a jelly from it and if it was decided to be of the proper consistency the liquid was at once drawn off. If the stock consisted of the first quality this jelly would contain about 80 per cent. of water. If made from a poorer quality of stock it would contain less than 80 per cent. of water. In all cases it was necessary to have the jelly of sufficient tenacity to remain without breaking or falling to pieces on the nets. This would be substantially the same proportions of water to the gelatine as used by cabinet-makers.

X Int. 86. Which would be the best for cabinet-makers' use, the gelatine before you dried it or the gelatine made from the glue after you had dried it, assuming that the quality of the glue was the same and the gelatine had been carefully dried and the dried glue carefully reheated?

A. I should say, decidedly, the glue before it had been dried, because, however carefully the glue may be reheated, to a certain degree it is depreciated, no matter whether to remelt it or by reheating it while still in a jelly form. What I mean is that any further boiling or heating it, whether in a liquid form or dry form, remelted, injures it after it has once been of the proper consistency.

210

X Int. 87. And does not glue that has once been reduced to the proper state deteriorate every hour whether you reheat it or not?

A. Not unless decomposition commences, as I do not think that the small evaporation for so short a time would in any way affect it otherwise than to make it of still more tenacious jelly, as there would be less water in it.

X Int. 88. Do you think that the best time to use glue for any mechanical purpose is when it is first made and before it has been dried?

A. I think the best time would be when it comes hot from the tubs, having passed through the strainers, being of the right consistency.

X 89 Int. For all mechanical purposes whatever?

A. That's too broad a question. If you will define your question I will answer it. Some substances would not stand hot glue, for the heat might color or destroy them.

X Int. 90. Can't you name some mechanical uses for which you think the glue coming hot from the tubs would not be the best?

A. Glue coming hot from the tubs, I believe, would have better sticking qualities for any purpose, but there may be some purposes for which it could not be used at that temperature, though I don't specially think of any particular object now.

X Int. 91. What makes you think it would have better sticking qualities?

A. Because, first, I believe glue is in the best possible condition

at this time; second, because hot glue will penetrate better into the pores of any substance than cold.

X Int. 92. When were you first of this opinion?

A. From the time I commenced manufacturing glue, and from the instructions received from Mr. Rich, and from numerous
211 experiments made personally, and from what I understood was laid down in the books.

X Int. 93. When did you come to this opinion?

A. From personal practical knowledge, after I had commenced the manufacture of glue. Prior to that it was mere theory.

X Int. 94. When was this?

A. Last of 1869 or first of 1870—I mean my personal practical knowledge—and also subsequently to 1874.

X Int. 95. Was Mr. Rich of the same opinion?

A. He repeatedly so stated to me.

X Int. 96. Do you think that prior to 1870 or 1871 you and Mr. Rich were the only practical glue people who were of this opinion?

A. I know nothing about the opinion of other glue-makers at that period, but I do know that Mr. Rich was a thorough, scientific, and practical glue-maker and I never met a man whom I thought was better posted up in all its branches.

X Int. 97. Was this the same Mr. Rich whom you mentioned as having been superintendent or foreman of Mr. Peter Cooper's factory?

A. This was the same Mr. Rich who was in the employment of Peter Cooper, but I cannot say whether as superintendent or foreman. I always understood that he was the chemical employé more especially of Peter Cooper.

X Int. 98. Was he manufacturing glue at Woburn in 1869 when you went there?

A. Yes; 1869 or 1870 he was with another party, one Rowe. He bought out their interest and employed Mr. Rich as foreman and instructor. He was about 60, I should say; might have been more.

X Int. 99. Did you ever know of any cabinet-makers using glue in this state before it had been dried?

A. Not from cattle glue.

X Int. 100. From any other glue?

212 A. While at Gloucester, I think, on one or two occasions a small quantity of liquid fish glue was purchased by some cabinet-makers; but fish glue is entirely a different product from glue obtained from cattle stock. It does not jelly unless evaporated to a great density, and it will dissolve in cold water without heat even if dried artificially.

X Int. 101. When was this?

A. I should say some time in 1874; might have been the last of 1874, when I returned from Cleveland.

X Int. 102. Did you ever, before 1873, use glue that had not been dried for any mechanical purposes?

A. I was constantly making experiments as to the strength and tenacity of glue obtained from various kinds of stock, and as part

of the tests would see how it would fasten or stick pieces of wood together, but not for mechanical purposes.

X Int. 103. Did you make these tests from liquid glue or from glue that had once been dried?

A. I had a little experimental tub in which I tested the various kinds of stock used. The glue was treated in this small tub the same as in the large tub. The product from the experimental tub was thoroughly tested in the warm liquid state, in a jelly state, and when dried on the nets the result in every case was carefully written down.

X Int. 104. Did you remelt the dried glue and test that?

A. Sometimes I did, other times I did not, but I always tested it by breaking it, showing the fracture as explained heretofore. If it stood the test in the liquid form and jelly form I knew it was good.

X Int. 105. How did you know this?

A. From my own knowledge of what constitutes good glue.

213 X Int. 106. Wasn't the whole object of these experiments to enable you to make the best of glue from the different classes of stock?

A. My object was to find out in the first place what were the proper consistencies of the liquid to make the best glue, what effect continuous boiling or heating would produce, what percentage any given kind of stock would yield, and what stock therefore was the most profitable to buy, so that I could act understandingly in the manufacture of glue.

X Int. 107. Did you make good dried glue or dried glue of inferior qualities?

A. Glue from the best stock used, or glue made from the best stock used, and was considered by the trade equal to Peter Cooper's best, and could not be distinguished from it. We also made an inferior kind of glue from skivings, bones, legs of cattle, etc.

X Int. 108. Did you make and sell any glue except dried glue prior to 1873?

A. No cattle glue certainly. I made while at Woburn a small quantity of glue from dog-fish skins, and I think we gave away a small quantity or sold it to put or fasten tips on billiard cues. We dried part of the product, and whether that sold or given away was in dry or liquid form I can't say. There was less than a pound made anyway.

X Int. 109. Did you not make or sell any so-called size?

A. We never sold or made any so-called size in a liquid form while at Woburn, but we sold tons of dried glue while at Gloucester for sizing, to be remelted and used for sizing. This was a poor quality of glue which could not be used for cabinet or joiner purposes, and would be totally unfit for gluing oil barrels.

214 X Int. 110. Then some qualities of glue are not good enough for cabinet purposes or for gluing oil barrels. Is that so?

A. I think the best quality of glue should be used for oil barrels and cabinet purposes. The cheapest article is always the dearest in the end.

X Int. 111. Don't you think that oil barrels could be covered with

a serviceable lining of glue except the glue was of the best or very good quality?

A. Of course the barrels could be coated with glue of not the best quality, but the jelly would be less tenacious, more liable to break, and consequently a greater danger from leakage.

X Int. 112. Are there many grades of dried glue for sale in the market with which a serviceable lining for oil barrels could not be made?

A. I have no doubt that there are various grades of glue in the market from which linings could be made, but the best glue obtainable would be the safest article to use and would form the best coating.

X Int. 113. Would the lower grades of glue make a serviceable lining?

A. I should never think it safe or advisable to use them.

X Int. 114. Question repeated.

A. I should think not. If I were in the oil business I never should use them.

X Int. 115. Do the lower grades of dried glue contain any of what you call gum?

A. They may and they may not. Some may be entirely gum. I don't call gum glue.

X Int. 116. Then what you call gum is the same thing as some of the lower grades of dried glue, is it?

A. I do not call gum glue. Gum may be obtained from poor glue stock improperly prepared or where long and excessive heat has been used in boiling. The product has little, if any, adhesiveness, and is worthless as commercial glue. The best glue stock
215 can be converted into gum by excessive heat and boiling.

X Int. 117. Do not other people buy and sell in the market as lower grades of dried glue what you yourself would call gum or mostly gum?

A. If they do such glue or gum is either sold for stuffing for oilcloth, carpets, and like materials, or it is ground up with a better class of glue to deceive the purchaser.

X Int. 118. Question repeated.

A. I know inferior glue is offered for sale.

X Int. 119. Is it offered for sale as glue or gum?

A. I suppose the seller recommends his wares as far as possible, though certain low grades of glue are sold for specific purposes, such as stuffing, etc. As already stated, I have sold tons of it for that purpose.

X Int. 120. Haven't you just had in your hands samples of dried glue which you told me was mostly gum or nothing but gum?

A. I should not call the sample I hold in my hand glue at all. I should call it gum.

X Int. 121. It was in a dry form, was it not, and made from a jelly by drying, was it not?

A. It was in a dry form. It was made from jelly by drying, but it was dried artificially and not upon nets, as the jelly would not have had the consistency to stand on the nets. The glue shows no

marks of nets, and I know could never have been dried upon nets. Though I have used the word glue in describing this article above, I consider it only gum and not glue.

X Int. 122. What difference is there between glue and gum except in the adhesive quality?

A. I don't know as a chemical analysis would show any essential difference, but heat has destroyed its adhesive properties.

X Int. 123. Did you sell as gum the cheap grades of glue that you made or did you call it glue?

216 A. We sold what I call gum simply for stuffing and not for glue.

X Int. 124. Did you enter and invoice it in your books and bills as gum or glue?

A. I did not keep the books, but I do know it was sold simply as stuffing, and the purchasers knew the character of the article before they bought it.

X Int. 125. Do you believe that in your books or bills it was designated either as gum or stuffing?

A. I don't know anything about it, but I do know there was no deception in the matter.

X Int. 126. I do not mean to imply that the purchasers was deceived in the character of the article, but I want your best judgment and memory as to whether the purchasers and buyers, in speaking of this article to each other, called it glue or gum.

A. As I said before, I never kept the books or made out the invoices. Among ourselves, we called it gum; I always did. What the purchasers called it I can't say. I never wanted to make the stuff. It was made from leather shavings and scraps chemically treated, and the excessive heat required to melt it converted it into this gum.

X Int. 127. What did you get a pound for it?

A. I cannot possibly remember. I think we sold some or most of it for less than 10 cents per pound.

X Int. 128. What was the price of Peter Cooper's best glue at this time?

A. I am not positive as to the price, but think it was some over 20 cents per pound—23 or 24 cents.

X Int. 129. Would this article you speak of have been serviceable for lining oil barrels?

A. Absolutely unfit.

X Int. 130. Had it no tenacity or adhesive qualities?

A. Jelly from it would not retain its form, and its adhesiveness might be considered next to nothing.

217 X Int. 131. And it would not have produced a serviceable lining whether it had been used before it had been dried or after it had been dried?

A. It would not.

X Int. 132. Why do not cabinet-makers use glue that has not been dried?

A. First, they may not know it is better; second, few cabinet-makers or manufacturers are situated where they can obtain glue

in liquid state, and the danger of decomposition would be so great that it would be unsafe to send it any distance without the use of antiseptics even if glue manufacturers were willing to sell out jelly in small lots. You couldn't get Geo. Upton or other large glue manufacturer to sell small lots, unless as a special favor, in my opinion.

X Int. 133. Why don't they make their own glue?

A. Why don't you keep a pig? I answered that carelessly and thoughtlessly, the counsel being joking and the question seeming so ridiculous and unreasonable, and hereby apologize for the same and the apology has been accepted, and did not consider it an answer. Cabinet-makers could not afford to have appliances for manufacturing glue, and unless they had the practical experience and knowledge of glue manufacturers could not do it.

X Int. 134. Why couldn't they afford it?

A. From the small amount they use, the expense of preparing lime pits, washing machines, a steam boiler, tanks with steam coils, and all the other appliances appertaining to a glue factory, would make their glue cost ten times as much as it would cost to buy the amount required, even if they had the skill to make it. Successful glue-making requires science and practical knowledge, and an ignoramus could never make glue that would answer a cabinetman's purpose.

X Int. 135. Any other reasons?

218 A. I should think those reasons were sufficient—that it wouldn't pay, wouldn't be profitable, and that the cabinetmen, as a rule, couldn't do it.

X Int. 136. Suppose they were using a thousand pounds of dried glue a day?

A. If a man were using a thousand pounds of dried glue a day and had the practical knowledge and experience to make good glue it might pay, for he could sell his extra product in the market and get his own product much cheaper than he now can and, then, he could use liquid glue if he so desired.

X Int. 137. How would he make the saving?

A. Glue manufacturers are supposed to make a profit on their goods. If he became the manufacturer he would save this profit. If he used the glue in the liquid form he would save the expense of drying and all the dangers of loss resulting therefrom.

X Int. 138. Do you suppose such a man, if, as you say, he "had the practical knowledge and experience to make good glue," would or would not have sufficient knowledge to know that it was not necessary for him to dry his glue before using it?

A. I don't know what one man's knowledge might lead him to do. I have no means of judging.

X Int. 139. Have you no opinion on the subject?

A. I have no opinion that I would be willing to swear to.

X Int. 140. If such a man had selected you and put you in charge, prior to 1873, of the making of his glue wouldn't you have had sufficient knowledge to know whether or not the glue needed to be dried before using?

A. From my reading, from my instructions from Mr. Rich, from my careful experiments I should have, without doubt, suggested the importance of using the glue in a liquid form when it was
219 practicable and when the daily production could be used at once.

X Int. 141. Why?

A. First, because it would save the expense and trouble of drying and the losses resulting therefrom; second, because I believe the article thus prepared would be better.

X Int. 142. Do you think Mr. Rich would have suggested the same thing if he had been employed?

A. I should think he would, although I have no absolute knowledge of what he would have advised. I believe he would.

X Int. 143. Do you think that any man, prior to 1873, who had wished to have used a thousand pounds of dried glue a day would not have known that by making his own glue he could have saved the manufacturer's profit and that if he made it carefully from good stock he could always get a good and uniform product and thus be more certain of the kind of glue he was using?

A. I have no means of knowing what a man might think under such circumstances. There would be various considerations which would have to be taken into account. Then it would be impossible for me to form a judgment, unless I could put myself in that man's place.

X Int. 144. Suppose that man was of such intelligence as would enable him to carry on a business which, as a part thereof, used a thousand pounds of glue a day?

A. He might or might not be induced to undertake it. I know it required hours of argument and days of time to persuade the Standard Oil Company, and who were already using tons of glue, to become manufacturers of the article.

X Int. 145. Did you finally persuade them to do it?

220 A. I persuaded them to build a factory for that purpose and I know that until the glue was actually produced and barrels glued from this liquid glue that they had serious doubts whether it would answer. This question of whether I could produce glue that would answer was repeatedly discussed between John D. Rockefeller, the president of the company, Mr. Flagler, Mr. Andrews, and myself. When the first boiling of glue was made Mr. Flagler, Mr. Andrews, and, I think, Mr. Rockefeller were all present and took great interest as to the result.

X Int. 146. I can understand that they may not have known that you could produce glue that would answer, but don't you suppose they knew that if you could it would enable the company to save the manufacturer's profit?

A. They questioned in the commencement whether any one could produce liquid glue that would answer, and when I explained the advantages repeatedly to them, how much they might gain or save if they made it themselves, I have no doubt they thought that if I or any one could manufacture liquid glue that would an-

swer the purpose that it would be a great and important advantage to them.

X Int. 147. Please answer my question more directly.

A. I believe that the Standard Oil Company realized the great importance of manufacturing glue and using it in a liquid form if they could be convinced it was practicable.

X Int. 148. Question repeated.

Counsel for the complainant objects on the ground that the witness has fully answered the question as he understands it.

A. I have answered directly, as I understand it.

221 X Int. 149. Have you any doubt that they knew that if you made the glue for them they would save the manufacturer's profit?

Counsel for complainant objects to the form of the question, as the witness is not supposed to know what any of the officers of the company defendant knew except from what they may have said to him.

A. I don't know, as they were not glue-makers, what they thought on the matter.

X Int. 150. What would any glue-maker have thought on the matter?

Same objection.

A. I should say any practical glue-maker who could sell or use the equivalent of two or three tons of dried glue daily would think that he was making large sales, whether made to himself or others.

X Int. 151. And thereby saving the manufacturer's profit if he used the glue himself?

A. Whether he sold the glue to outside parties or used it himself in each case he would make a profit?

X Int. 152. Don't you think that any practical glue-maker would also have known that if he could use the glue before it was dried he could save the risk and expense of drying and remelting?

Same objection.

A. If he did really know he could use the glue satisfactorily before drying and could do so he would necessarily know he would save expense of drying and losses resulting therefrom if he were certain that his liquid product would not suffer loss from decomposition.

X Int. 153. Do you think such a man would think that his product would suffer from decomposition if he used it as soon as it ran through the strainers?

222 Counsel for complainant objects on the ground that it is not proper cross-examination, and that the defendant's counsel makes the witness his own witness.

A. If he knew it would answer the desired purpose he would also know that the product would be free from decomposition unless the

stock used had been injured by fermentation or decomposition previous to the boiling.

X Int. 154. Question repeated.

Same objection.

A. Where decomposition has not commenced, and where the stock from which the glue was made was good, the hot liquid glue as it passed through the strainers would be perfectly sweet and good, provided it had been properly treated and manufactured.

X Int. 155. Would not the practical glue-maker know that such liquid glue was liable to decompose if not used or dried immediately?

Same objection.

A. Every glue-maker must know and does know that liquid glue will rapidly decompose unless preserved by some antiseptic.

X Int. 156. Would not the practical glue-maker know that such liquid glue, as it passed through the strainers, was at least as good for ordinary mechanical purposes as if it should be reduced to the dry state and afterwards water added to it and it remelted to the same consistency as it then existed?

Same objection.

A. I don't know what he might know, but he should know that it would be better.

X Int. 157. Why should he know this?

223 Same objection.

A. Because I believe the glue is better, and a practical glue-maker should know his business so well that he can tell or know when the gelatine or liquid glue is in the best condition for use.

X Int. 158. Was there anything printed in the books published before 1870 that would enable the practical glue-maker or practical chemist to come to any conclusion on this point?

A. I think the books plainly state that continuous boiling or excessive heat injures the texture of the gelatine.

X Int. 159. What should the intelligent glue-maker or practical chemist have understood or inferred from this?

Same objection.

A. I don't know, but I should have thought a long continuous boiling, reheating, and remelting would depreciate the product.

X Int. 160. Would you have understood or inferred or thought from what the books said that the glue would have been any better for mechanical uses if dried than it was before it was dried?

A. I always understood from the books and my general knowledge that the glue was dried for the purpose of keeping it as a staple and merchantable article. With my later experience, and teachings of Mr. Rich, and my practical experiments, I should have thought the glue was better before it was dried and never reheated.

X Int. 161. Cannot good, serviceable glue be made from hides either in the dry or green state without liming them?

A. I should say it could not be done profitably or satisfactorily for the following reasons: In the first place, the stock could not be thoroughly or readily melted with the amount of heat which could be safely used, and only a small percentage obtained,
224 and this in a thin state. If long and excessive heat was used the product would be seriously injured if the required or necessary density was obtained.

X Int. 162. I am aware, from the testimony in this case, that glue-makers are accustomed to lime their stock generally and to use various processes and appliances for producing the most and best glue from any given quantity or quality of stock. What I want to know from you is whether, if you take the skin or hide of a calf that was killed to-day and cut it up into small pieces, you or any other practical glue-maker cannot make some good glue from it simply by boiling it in a kettle over an ordinary fire.

A. I have no doubt whatever that I or any practical glue-maker could obtain good glue from a young calfskin properly washed and cut up by cooking it in a water bath or by carefully boiling or cooking it rather with a low degree of temperature, but unless he or I were exceedingly careful and had a very moderate fire under an iron kettle it would be almost impossible to prevent injury to the texture from excessive heat thus directly applied. The chances would be that the product would be seriously injured. I should not like myself to attempt to make good glue in this way. I mean good, first-class glue, sufficient for cabinet purposes and gluing oil barrels.

X Int. 163. Is the liming and soaking of stock and the washing off of the lime and the treatment of the stock with acid and the use of jacketed kettles of any use except for economy's sake and to enable the manufacturers to be more sure of getting the best result from a given quantity and quality of stock?

A. I think it is absolutely necessary to lime the stock. I know it is absolutely necessary to remove all traces of lime or acid. The use of jacketed kettles or steam coils is very essential, as the
225 stock can be more safely melted than by direct heat; by the above process the best results and the largest percentage of glue is obtainable.

X Int. 164. Cannot some of the lower commercial grades of dried glue be obtained from stock that has never been limed or from stock which has been limed, but all traces of lime not removed therefrom?

A. As has already been stated by me, a certain amount of gelatine can be obtained from unlimed stock, which would more resemble sizing than commercial glue. If melted down by excessive heat and brought to a proper density to be dried as commercial glue there would be serious danger of injuring the product. Unless all the lime substantially was removed, under any circumstances the product would be worthless; if brought to the proper consistency it would form a jelly, but in a very short time this jelly would become full of small holes or pits, and in a few hours more the

whole mass would become liquid or semi-liquid. I have repeatedly seen jelly which contained lime act in the manner as above stated, and the presence of lime was subsequently proved by the use of litmus paper.

X Int. 165. Is there any grade of dried glue that passes under the name of size or sizing?

A. No, not so far as I understand it. Sizing may be made from dried glue by the addition of water and remelting. But sizing as it is commonly understood is a thin solution of gelatine which would not be of sufficient density to be dried upon nets. It is used most generally by paper-makers, I understand.

X Int. 166. What is the difference between gelatine and glue?

A. Commercial glue, as generally understood, is dried glue. Any solution from glue stock, no matter how large a per-
226 centage of water, which will take form, or, as we say, will jelly, may be called gelatine as well as jelly formed from a denser preparation.

X Int. 167. Are not what is known as calves'-foot jelly or ordinary soup stock forms of gelatine?

A. All extracts from bones, sinews, pieces of hides, or skins are forms of gelatine.

X Int. 168. Do they not all contain what, if dried, would be glue?

A. They all contain what, if dried, would be glue, but not necessarily commercial glue. In some of these preparations there would be scarcely any adhesive properties whatever, and if dried would not be fit for cabinet purposes or to line oil barrels. There would necessarily be more or less fat or grease in the product, and such fat or grease would seriously injure it for the above purposes.

X Int. 169. How did you separate in your stock boiling fat any fat there was therein?

A. The stock having been previously thoroughly limed, any grease or fat contained in the same had been saponified, forming what we call lime soap, and which lime soap was skimmed off from the top of the kettle before the liquid glue was drawn off.

X Int. 170. Did you ever make glue from stock that had not been limed?

A. I have made glue from cattle feet which had not been limed. After a certain length of boiling the grease or neat's-foot oil would rise to the top of the kettle, and was carefully skimmed off. The remaining product was boiled an hour or so longer, run off, and strained into an evaporating tank, and subsequently into a vacuum pan which we obtained, and afterwards dried it the usual way. The product we thus obtained was of dark color and poor quality. That glue I should not consider fit to line oil barrels or for any cabinet-work requiring a strong and tenacious glue. In the first place, the material from which it is obtained is not equal to
227 hide stock; in the second place, there was a large amount of animal matter—flesh—which was incorporated in it and other impurities, including a certain percentage of oil, which could not entirely be skimmed off. Then, again, it required longer and

more continuous boiling, and was consequently more or less injured thereby. We made quite a number of tons of it without any liming or treating of the stock except boiling and condensing it as I have described. This was done at Woburn, and I have not the slightest idea what it sold for.

X Int. 171. How long has glue been known and its adhesive properties recognized?

A. As I understand it, from where the memory of man runneth not to the contrary.

X Int. 172. Was not glue so known before litmus paper and jacketed kettles and steam coils and the treatment of stock with lime and acid were practiced in the making of glue?

A. The process of making glue was doubtlessly known before the knowledge of litmus paper, steam coils, and jacketed kettles were known or used, but how the ancients prepared their glue stock I don't know; whether limed or subjected to any process whatever, I don't know.

X Int. 173. Don't you think it reasonable to suppose that the adhesive properties of glue were discovered before it was discovered that liming of the stock was a good thing?

A. I know that with all the knowledge and science of the 19th century that good glue cannot be made unless the stock is properly prepared, but the ancients might have known that there were certain adhesive properties that could be obtained from simply boiling pieces of hides or skins of various animals.

X Int. 174. Don't you think that Peter Cooper's glue is better than the glue the ancients used to make?

228 A. Yes; if both parties made it from the same kind of stock. I wot not what may have been among the lost arts.

X Int. 175. Is it not reasonable to suppose that the ancients made their own glue and used it before they had learned to dry it for commercial purposes?

A. I have no knowledge that the ancients ever made or used glue made from cattle stock or skins of animals.

X Int. 176. What did they make it of?

Question objected to because the witness cannot be supposed to have any knowledge on the subject.

A. In the first place I don't know that the ancients ever used glue for adhesive purposes, other than gums or extracts from rice and other vegetable substances. I know the Chinese make a cement or glue from rice.

X Int. 177. Is that the only kind of glue you have been talking about in your last eight or ten answers?

A. I don't understand the question, but my answers have been I neither know how or from what substances the ancients made glue, if they made any other than cements from rice or other vegetable matter as before stated.

X Int. 178. How long has it been known that glue could be made by simply boiling hides or skins of various animals?

A. I don't know.

X Int. 179. Isn't it reasonable to suppose that the persons who first discovered this fact discovered it from experimenting from liquid glue that had never been dried for commercial purposes?

229 Objected to on the ground that it is not the proper subject for cross-examination, and that therefore the witness becomes the defendant's own witness.

A. I have no knowledge of how the adhesive properties of glue were first discovered or in what way the experiments were made.

X Int. 180. Please answer the last question to the best of your information and intelligence.

Same objection.

A. I have no information on the subject. It seems to me almost impossible to give an opinion where I have no information or knowledge to base that opinion upon.

X Int. 181. Is it not reasonable to suppose that the method of drying glue so that it would be easily preserved and transported for commercial purposes was discovered after it was discovered that glue not dried was valuable for various mechanical purposes by reason of its adhesive qualities?

Same objection.

A. As the arts and sciences advanced and there was a demand for adhesive products, the necessity of the case compelled some method to be discovered or invented for preserving these products in a staple form. I think this may be very probable.

X Int. 182. Is glue not dried for the same objects that fish and meats and fruits are dried, viz., to keep it from destruction and to put it in a form where when needed it can be used for the purposes for which it was useful before it was dried?

A. I understand glue is dried for such purposes; to preserve it and to put it in commercial form convenient for use and transportation.

X Int. 183. Is it dried for any other purposes that you know of other than you have just named?

230 A. If I understand the question correctly, the object of drying glue is to have it in a convenient form where it will not suffer loss from decomposition and can be readily transported from place to place.

X Int. 184. How long have you known of so-called liquid glue being on sale in the markets for adhesive purposes?

A. I have known of a liquid glue called Spaulding's glue and Upton's glue put up in small bottles as the earliest that I know of. Spaulding's was the first, I think. Of late years fish glue has been put up subsequent to 1874. The date of Spaulding's and Upton's glue I cannot give.

X Int. 185. Please look at the patent I now show you, being patent No. 57016, dated Aug. 7, 1866, granted to Herbert W. C. Tweddle for an improved composition for lining oil barrels, and state whether, in your opinion, by the addition of a small quantity of bichloride

of mercury (corrosive sublimate) the liquid glue could be thereby preserved.

A. I have used various and many antiseptics to preserve glue, but have never used bichloride of mercury and cannot say from personal knowledge whether it would preserve the glue from decomposition or not. I should say that unless a very small quantity indeed was used it would destroy the gelatine.

X Int. 186. Please look at the letters patent No. 79736, dated July 7, 1868, granted to Andrew Dietz, of New York, for an improved process of treating glue, and state whether the process therein described is one that, in your opinion, would accomplish that purpose.

A. I do not believe and know from actual experiments that the use of rosin and oil would not improve the quality of glue for cabinet purposes or for gluing oil barrels. While at Cleveland,
231 on certain small casks which I had made for the purpose, I added various proportions of rosin and oil to glue and lined the casks, filled them with oil, and in every case the oil used in the ingredients colored the petroleum oil, and the casks in a short time leaked. I made many experiments of this kind and carefully recorded the experiment. There are certain antiseptic qualities in rosin; also in oil if it could be thoroughly incorporated. I never should put oil or rosin into glue for any purpose myself, and I do not believe that "cheaper and inferior kinds and qualities of glue," as stated in the patent, "are made equal to the higher or better grades or qualities by the use of rosin or oil," as set forth in said patent.

X Int. 187. Don't you think that liquid glue could be made to keep longer by the addition of rosin or oil, as described in that patent?

A. As I have already stated, there are certain antiseptic properties in rosin, and liquid glue might be kept somewhat longer by the use of rosin than it would without it, but I do not think it is a sufficient antiseptic to keep it for any length of time, unless such a quantity of rosin were added as to destroy it for any commercial purposes, except it might do for stuffing for oil-cloth carpets.

Patents shown the witness are offered in evidence for defendant and marked "Defendant's Exhibit Tweddle Patent of 1866, J. H. T., examiner," and "Defendant's Exhibit Dietz Patent of 1868, J. H. T., examiner."

Complainant's counsel objects to the admission in evidence of such letter- patent unless they have been named in the answer.

X Int. 188. At the end of the Dietz patent of 1868 is this statement: "The mixing with this article, either while being or
232 after it has been prepared, of a small quantity of carbolic or wood acid, about a teaspoonful to the gallon of glue, will more certainly prevent its moulding or souring or deteriorating in quality." Is that statement true, in your opinion?

Objected to; the witness becomes defendant's own witness, it being not proper cross-examination.

A. Carbolic acid, properly and carefully used, is one of the best antiseptics I know of. If mixed with glue while the same is being prepared—that is, boiled—it would very largely evaporate and be of no use. I should say a teaspoonful of the pure acid from the crystals would be too large a quantity for a gallon of liquid glue. I have myself destroyed the tenacity of liquid glue by putting too much carbolic acid in it, but if a proper amount is used it will prevent, for a long time, moulding or decomposition of liquid glue, though to a certain extent it would deteriorate the quality.

X Int. 189. Would the best liquid glue that had been treated with carbolic acid be kept in such condition for several months that it would make a serviceable coating for oil barrels?

Same objection.

A. I don't know from any personal knowledge on the matter, never having tested or tried it for that purpose, and I don't know what effect carbolic acid might have on the petroleum as to coloring it. I don't know after that length of time it would be good for cabinet-work from personal knowledge.

X Int. 190. At what temperature of glue were the defendants lining their barrels when you went there in January, 1874?

A. I did not test it by the thermometer, but should say it was at about the boiling point.

X Int. 191. Did they change it afterwards?

233 A. At my suggestion jacketed kettles were put in, and I constantly charged Mr. Hopper not to keep the glue any hotter than was absolutely necessary to successfully line the barrels and do the work.

X Int. 192. What temperature did they use?

A. I don't know. I was, perhaps, once a day and perhaps once a week in the gluing-room, but I do not know that I frequently cautioned them about excessive heat. I only had charge of the manufacture of the glue and was not responsible for putting it on. If I furnished them good glue that was all I had to do. The gluing-room was entirely separate from the building where the glue was made. In my own department I was present both day and night; frequently half the night. The buildings were about 200 feet apart. The glue was pumped from the settling tank in my building to the jacket kettles in the gluing-room.

X Int. 193. Were the jacketed kettles put in the gluing-room before the glue factory was built?

A. I believe so. I had them put in as soon as practicable and they were at once put to use.

X Int. 194. At what density did you find them using the glue when you went there?

A. I never tested it otherwise than by rubbing the liquid glue in my fingers. I should say the density was about 80 per cent. water. I think I can tell very nearly by rubbing the liquid glue between my fingers. When a more thorough test is required I could make it.

X Int. 195. Did you make any change at all after you began making glue in the density?

A. In every boiling, after I commenced making glue, I tested it in the liquid state, in the jelly state; took a cubic inch of the jelly, carefully weighed it, subsequently cut it in slices and dried it, and put the date of the boiling upon each slice, and knew in
234 every case what density I had. Different kinds of stock required different densities, and I judged what density was required by the tenacity of the jelly and rubbing between my fingers, as described. The density varied from 75 to 85 per cent. of water.

X Int. 196. How did the amount of water in this liquid glue which you put in the barrels compare with the amount of water that there would have been in it if you had been going to make it into dried glue?

A. I should think the amount of water in both cases would be substantially the same.

X Int. 197. Was this liquid glue that was pumped from your settling tanks to the gluing-room good glue in all cases?

A. As pumped from my settling tanks I know that in every case it was good glue, as I had dried samples of every boiling and kept them for several years. What might happen to it after it had left my tanks while in the gluing-room I don't know.

X Int. 198. Was the glue in your settling tanks all in good condition at the time it was being pumped to the gluing-room to be kept in your factory and cooled and dried?

A. Had I at any time taken a quantity of liquid glue from these settling tanks and put it into proper coolers used for this purpose, sliced and dried it, it would have produced precisely the same kind of glue as was in the samples made from the same boiling and would have been first-class merchantable glue if the drying had been satisfactory. I always took my samples from the settling tubs.

X Int. 199. Was it as you took these samples out as it was pumped from the settling tubs in good and proper condition to be then used for any or the ordinary mechanical uses to which glue was applied?

A. I considered it as good glue as could be bought in the
235 market for any mechanical purposes, because the stock was carefully limed, carefully boiled, as free as possible from all acids and alkalies, and was carefully and well made from selected stock.

X Int. 200. Would the drying of it have improved it for any mechanical uses?

A. None that I know of.

X Int. 201. What was its temperature in the settling tubs?

A. I only used sufficient heat to keep it in liquid form and never used enough heat to bring it to the boiling point; knew the precise temperature at the time, but can't state it exactly now. I preferred to have it 150 degrees or less.

X Int. 202. How long in the usual course of business after it

was drawn from the settling tubs was it pumped into the gluing-room?

A. I generally so arranged it that it should be pumped at once as soon as drawn off, and for this reason very frequently had my boiling at night so that it would be ready for the man to use in the morning.

X Int. 203. Have you got the copies of your letters that you wrote to the defendants before you went to Cleveland?

A. I had at that time no letter book and kept no copies.

X Int. 204. Did you or they write the first letter?

A. I wrote the first letter.

X Int. 205. Have you the letters they wrote to you?

A. I have not.

X Int. 206. Nor any of them?

A. I have not.

X Int. 207. What was the elastic glue which you referred to in your letter of Nov. 19, 1873?

A. I had made by certain additions to gelatine, known at that time only to myself, a product which resembled India rub-
236 ber, and which was very elastic and would keep in that condition for a long time. I thought of taking out a patent on it, as referred to in my letter of Nov. 19th, 1873. I never made any of it at Cleveland for the reason that I thought the glue I did make answered all practical purposes and the other glue would be more expensive.

X Int. 208. You stated in your examination last summer that you had never seen Leggett's patent until shown you by his counsel in New York. What did Mr. Flagler tell you about this patent when you had the talks in Cleveland?

Objected to on the ground that he has already stated in the direct examination what he did say.

A. In the conversation between Mr. Flagler, Mr. Andrews, and myself in relation to Mr. Leggett's patent they simply said he had obtained a patent or had patented the use of liquid glue for oil barrels, and asked me if I thought my process would be an infringement on Mr. Leggett's patent. My answer was that as I had never seen or knew what Mr. Leggett's claim actually was I could give no opinion whatever. I simply said I knew I could make liquid glue which would answer their purpose.

X Int. 209. Was there any discussion as to the validity of Leggett's patent?

A. I don't remember that there was.

X Int. 210. Did they have a copy of it?

A. If they did, they did show it to me.

X Int. 211. And you got no information from it then, did you?

A. As I have stated before, I had never seen the patent or knew what he claimed prior to the patent being shown me in New York.

X Int. 212. Did you know what he described in his patent?

237 A. I only understood from Mr. Flagler and Andrews that

Mr. Leggett claimed a patent for gluing barrels with liquid glue which had not been previously dried.

X Int. 213. And such a process was similiar to that referred to in your letter of Nov. 19th, 1873, was it not?

A. I have repeatedly said I did not know what Mr. Leggett's process or patent was or what he distinctly claimed. In my letter of the 19th Nov., 1873, without any reference to Mr. Leggett or having heard of him, I said I believed I could make a liquid glue which would answer all their purposes of gluing barrels without the same being previously dried. That is substantially what my letter set forth.

X Int. 214. In your letter you state as follows: "I was thinking this morning as you used so much glue why not make it at your own factory. Half the cost of making glue is drying it. All this could be saved; also freights. Then stock could be bought at the West at a much lower price than here. Of course you use steam, and if so it would not cost $1,000 for the tubs, etc., needed. You could make your own glue for one-quarter of what you now pay, and even less, and if you so wished could furnish other parties with glue. No skilled labor is required, with the exception of one man, and three or four men would be all needed. Why not, then, make your own glue, elastic or not, as you please?" Did the extract from the letter I have read contain your best judgment as resulting from your experience and without any knowledge of Leggett or any patent of his?

A. When that letter was written I had not the slightest knowledge of the amount of glue used by the Standard Oil Company or the number of barrels they glued daily. Had I known the
238 amount required I should have most certainly estimated the expenses and outlay very much larger and the number of men employed much greater. When I did go to Cleveland in person on the 8th day of January, 1874, and while there and having found out the large amount required, I did say I should want more men, more tubs, more lime pits, more skilled labor, and that I desired the assistance of my son, Wm. Plumer, Jr., a practical glue-maker. All my estimates and opinions formed before or after I reached Cleveland were not based on any information received from Mr. Leggett, as I had never seen him nor his patent, as before explained.

X Int. 215. Were you confirmed after reaching Cleveland in your opinion that it would be a wise thing for the Standard Oil Company to make its own glue?

A. I not only thought it a wise thing, but of the greatest pecuniary importance to them to do so, and so stated to them.

X Int. 216. Please look at the paper I now show you and state if you remember to have received from the Standard Oil Company a letter in reply to yours of Nov. 19th, 1873, of which this is a copy.

A. I remember receiving an answer from the Standard Oil Company a short time after I wrote. Whether this is a correct copy or not I cannot say. If I am not mistaken there was a second letter received from Mr. Flagler in answer to one that I had written, that

they would pay all my traveling expenses if I would come out to Cleveland and talk the matter over.

X Int. 217. Have you any reason to doubt that the letter of which I have shown you a copy was received by you?

A. I have not.

The letter shown the witness is put in evidence for defendant and marked "Defendant's Exhibit Flagler Letter No. 1, J. H. T., examiner."

239 X Int. 218. Please look at the letter I now show you, purporting to be dated Dec. 26th, 1873, and say if, to the best of your information and belief, it is not a copy of the other letter received from Mr. Flagler, to which you have referred.

A. I have no doubt this is a copy of the letter.

The letter shown the witness is put in evidence for defendant and marked "Defendant's Exhibit Flagler Letter No. 2, J. H. T., examiner."

Direct examination resumed:

Int. 219. In your answer to cross-question 68 you say that prior to 1874 there was used nothing but dried glue remelted. Now, what did paper-makers and oil-cloth makers use in their business?

A. I had been informed that paper-makers were accustomed to often or frequently make their own size from pieces of rawhide or prepared glue stock. I have no personal knowledge from actual observation that they did so prior to my visit to Cleveland in 1874. While there I became acquainted with the foreman of a paper manufacturer and saw him making size from pieces of rawhide. I knew that size was used, as I have before stated, by paper-makers prior to 1874, but in my answer to this cross-question 68 I did not consider size as commercial glue, for it could not have been dried on nets, there not being sufficient density of glue in the solution.

Int. 220. You stated yesterday that you thought it would take a quarter of a pound of dried glue to properly glue an oil barrel. Have you made any calculations since that would cause you to change your opinion; and, if so, what are they?

A. Since that time I have estimated the inside area of the average size oil barrel. I have taken into consideration the thickness of gelatine required to make a sufficient coating, the density of
240 the jelly containing about 80 per cent. of water, and have arrived at the conclusion from these estimates that a gallon of liquid glue of the given destiny would contain about one and six-tenths pounds of dried glue, and should say that not more than three barrels at the most could be properly lined by one gallon of this liquid glue.

Int. 221. Is or is not oil a very penetrating liquid, requiring a very strong coating of glue to keep it intact in the barrels?

A. It is known to every one acquainted with its uses that it is very penetrating, and there are constant complaints of leakage of

barrels among purchasers, and that it does absolutely require a tenacious lining of the best quality of glue.

Int. 222. Had you known when you first learned that the Standard Oil Co. was using so much dried glue and had arrived at the knowledge of the great utility of using liquid glue in its place, not knowing that Mr. Leggett had obtained a patent for it, would you have not done so?

Objected to as incompetent.

A. Had I known at any time that there was such a demand for liquid glue and had I possessed the knowledge which I subsequently obtained of this demand while at Cleveland, and did not know that Mr. Leggett had already obtained a patent for the same or similar process, I should have most certainly applied for a patent, as I should have thought it of great pecuniary value.

Cross-examination resumed:

X Int. 223. You thought it would be of great pecuniary value to the Standard Oil Co. when you wrote them?

A. I did, but did not think it one-hundredth part the value
241 that I did after I had visited Cleveland and actually found out what the demand might be for such a product.

X Int. 224. You did not know how much glue was being used for gluing oil barrels?

A. Had not the slightest idea that the demand was so great for gluing barrels as I afterwards learned it to be.

WILLIAM PLUMER.

UNITED STATES OF AMERICA, }
District of Massachusetts. }

I, J. Henry Taylor, an examiner appointed by the circuit court of the United States of America in and for the district of Massachusetts, first circuit, and duly qualified, do hereby certify that the foregoing are proofs for final hearing taken before me in the cause in the caption named on the part of the complainant; that on the several days named in the foregoing evidence there attended before me at Lexington, in said district of Massachusetts, the counsel for the respective parties in said cause and the witness, William Plumer; that said witness, being of sound mind and lawful age, was by me first duly cautioned and sworn to testify the truth, the whole truth, and nothing but the truth in said cause, and was then carefully examined, and the said witness did thereupon depose as appears in the foregoing deposition, which deposition was reduced to writing in the presence of the said witness, and when completed was read over to the said witness and signed by him as and for his deposition in my presence.

242 I further certify that I am not attorney nor of counsel for either of the parties in said cause nor in any way interested in the event thereof.

I further certify that in the taking of said evidence I have complied in all respects with the requirements of the 67th rule in equity, as amended, of the Supreme Court of the United States, and I herewith transmit said evidence under my seal to the clerk of the court in which said cause is pending.

[SEAL.] In testimony whereof I have hereunto set my hand and seal this 21st day of April, A. D. 1888.

J. HENRY TAYLOR,
Examiner U. S. Circuit Court, District of Massachusetts.

Examiner's fees, $50.

243 United States Circuit Court, Southern District of New York.

EDWARD W. LEGGETT
vs.
THE STANDARD OIL COMPANY.

NEW YORK, *May 3d*, 1888—11 a. m.

Met pursuant to adjournment.

Samuel C. Reed, Esq., appeared for complainant, and C. C. Beaman, Esq., and W. S. Beaman, Esq., for defendant.

Direct examination by SAMUEL C. REED, Esq., of KING UPTON, a witness called on behalf of the complainant.

He, having been duly sworn, testified as follows:

Q. 1. What is your name, age, residence, and occupation?

A. King Upton; I am 26 years old; I reside in Salem, Mass.; I am a glue manufacturer; my factory is at Peabody, Massachusetts.

Q. 2. How long have you been engaged in the manufacture of glue or interested in its manufacture?

A. Nine years.

Q. 3. What is the name of your firm, and how long has the firm been established in the business of glue manufacture?

A. The same firm has been established since 1859. The Upton concern has been established since 1808.

Q. 4. What is the rank of your firm in the business in regard to the production of glue?

A. We are estimated to be the third in rank.

244 Q. 5. Please state the different steps practised by you in the manufacture of glue.

A. The stock as received from the tannery is put into lime liquor, allowed to remain there a sufficient length of time to plump it, which opens the pores of the stock and renders it more easily soluble and also neutralizes many foreign matters that would be injurious to the glue. It is then washed in large quantities of water in washing machines, after which a solution of acid is applied to completely neutralize the lime left after washing. The acid is then washed out, leaving the stock free of either acid or lime. The stock is then placed in kettles, covered with water, and steam applied. It is then

boiled for about three hours and the resulting liquid or solution of glue is drawn off, more water is added, and the operation repeated until all the glue is extracted from the glue stock. The solution of glue is put in coolers and allowed to jelly, after which it is cut into thin cakes and exposed to the action of air to dry.

Q. 6. Are all these steps in the manufacture which you have detailed necessary in order to make serviceable glue?

Objected to as leading.

A. Yes, sir.

Q. 7. Do tanners' scraps contain lime when received by you from the tannery?

Same objection.

A. Yes, sir.

Q. 8. What effect does this lime produce if not removed before boiling?

A. It destroys the gelatine.

Q. 9. Any other as regards the effect it may have upon the gelatine and by gelatine do you mean glue?

A. It renders the product from such stock unfit for use as glue. By gelatine I mean glue.

245 Q. 10. One Ranson H. Sargent, a witness for the defendant, has testified (folio 35) that he took tanners' scraps consisting of dried pieces of hides, odds and ends of hides and hoofs, and put them into a cauldron kettle just as they came from the tannery, without treating them in any way, either with lime or acid, and without removing the lime that was in them, and boiled them a day, and with the glue he so obtained he lined his oil barrels. Now, what kind of glue would he get by the means he used, and could it have made a serviceable lining for the inside of oil barrels; and, if not, why not?

Defendant's counsel objects to the foregoing question, 1st, because it is wholly improper for counsel for complainant to state as he has in said question what said Sargent has testified to and because it does not appear from any one portion of such Sargent's testimony what he did; it rather appears from his entire deposition what he did; and until the witness is shown to have read such Sargent's deposition, which states what he did, it is wholly improper to ask the witness what result could be obtained by said Sargent.

The question is fully objected to as leading.

A. He would have obtained a watery solution having none of the necessary properties of glue.

Q. 11. (The witness is shown Milligan Exh. No. 1.) Would the resulting product that he would have obtained resemble that in the exhibit now shown you?

Same objection.

A. Yes, sir.

246 Q. 12. If he had added in the boiling plaster of Paris as he says he did, in folio 55, what effect would that have had?

Same objections.

A. The plaster of Paris would probably have been mostly precipitated to the bottom. If any remained and was used in oil barrels it would be likely to make the oil cloudy and not worth so much.

Q. 13. If he had boiled these tanners' scraps six, eight, or twelve hours, what would have been the resulting product?

A. The longer he boiled the worse it would be.

Q. 14. Have you read the testimony of Ransom H. Sargent now mentioned here as a witness for the defendant?

A. Yes, sir.

Q. 15. Have you read the testimony of one Warren W. Green, another witness for defendant?

A. Yes, sir.

Q. 16. Warren W. Green, another witness for the defendant, says, folio 165, that he obtained from a tannery scraps and pieces of hide (on his cross-examination, folio 175, says they were cattle's feet, hides, and such stuff as he could gather up from farmers who had been butchering) and put them, without treating them in any way and without washing out the lime, into a kettle and built a fire around the kettle and boiled them 6 or 12 hours, and with the product he obtained from this boiling, he being a cooper, lined oil barrels and sold them to the oil-refiners. Now, by the means he used what would have been the resulting product, and would it have made a serviceable lining for the inside of oil barrels?

Defendant's counsel protests against the statement by the complainant's counsel in the foregoing question of what the de-
247 fendant's witness, Green, has testified to or what he did, and insists that as the witness, now being examined, has testified that he has read the testimony of defendant's witness, Green, the proper way for complainant's counsel would be to tell his witness to assume said Green's testimony to be true and then ask him what would have been the product obtained by said Green, and not ask him "if it would have made a serviceable lining for the inside of oil barrels."

A. It would have resembled the Milligan Exhibit No. 1 and been unfit for use in lining oil barrels.

Q. 17. William H. Abbott, another witness for defendant, has testified, folios 201, 215, and 216, that he took three bushels of tanners' scraps, rawhide, put them into a kettle, boiled them without having relimed them or washed from them the lime then in them, and with the resulting product from the boiling of th ese three bushels of tanners' scraps he lined 200 oil barrels. What, in your opinion, would be the resulting product obtained by him from these three bushels of tanners' scraps, and what kind of a lining would it have made for the inside of oil barrels?

That portion of the question which purports to state what defendant's witness, Abbot, testified to is objected to.

A. The product obtained would have been similar to the Milligan Exh. No. 1 and unfit for lining oil barrels. If the three bushels of stock had been properly treated and made into good glue it could not have produced over twenty-five pounds of hard glue, with which amount it would have been impossible to give a serviceable lining to 200 oil barrels. It would have probably lined seventy-five barrels, as one-third of a pound to a barrel is
248 usually estimated the smallest amount of glue which will glue a barrel well.

Q. 18. In your opinion does dried glue when remelted or in the form of soup glue—by that I mean glue which has never been dried—enter the pores of wood when applied to it?

A. Yes, sir.

Q. 19. Which of the two do you consider the most penetrating in its effects?

A. The soup glue will penetrate further than the remelted glue, as in an instance in our own business we applied soup glue, in 1884, of the same specific gravity and the same temperature as the remelted glue on paper for the purpose of making sand-paper; where the remelted glue would remain on the surface of the paper and stick the sand the glue soup penetrated through the paper to such an extent that there was not enough left on the surface to stick the sand.

Q. 20. In your opinion will soup glue make a better and more serviceable lining for oil barrels than dried glue remelted?

Objected to as leading and because it does not appear that the witness has had any experience in lining oil barrels.

A. As the soup glue contains a larger amount of gelatine than the same amount of soup glue would contain if dried, and also will penetrate better, I should think it would make a superior lining for oil barrels. By my answer that a given amount of soup glue would contain more gelatine than the same amount of soup glue would contain when dry, I mean that in the process of drying there is a loss of from 15 to 20 per cent. of weight, which probably is lost into the atmosphere in the form of various gaseous compounds.

Q. 21. What, in your opinion, is the most precarious part of the manufacture of glue?

A. The drying of it. The reason this is the most precari-
249 ous operation is that if fermentation sets in, caused by warm and moist weather, there may be a total or partial loss of the gelatine in process of drying.

Q. 22. How long, in your opinion, would soup glue last taken and put into a barrel and the barrel bunged up?

A. It would probably spoil in forty-eight hours.

Cross-examination by Mr. BEAMAN:

X Q. 23. Who compose your present firm?

A. My mother, Henry Wardwell, a lawyer in Peabody, and myself.

X Q. 24. How long have you been in the firm?

A. Since my appointment as trustee on my coming of age, in April, 1883.

X Q. 25. To what portion of the business have you attended?

A. For two years I worked in the factory, for two years I was superintendent, and for five years I have been general manager.

X Q. 26. What stock do you use in the manufacture of glue?

A. Principally scrap from tanneries all over the country.

X Q. 27. Do you use anything else other than scrap from tanneries?

A. We use also trimmings from the hide dealers.

X Q. 28. Anything else?

A. Those are the principal articles. We use some things that I don't care to specify.

X Q. 29. And these things which you do not care to specify you have always used at your factory since your connection with it?

A. I do not consider that I can answer this question without exposing my trade secrets.

X Q. 30. Of what are the trimmings composed which you get from the hide dealers?

A. Pieces of hide, ears, noses, and dew-claws.

X Q. 31. Anything else?

A. No; not that I can think of.

X Q. 32. This scrap that you get from the tanneries, what is that?

250 A. Pieces of hide, ears, skivings, fleshings, similar to that obtained from the hide dealers, except that stock from the tannery contains lime, while that from the hide dealers contains salt.

X Q. 33. From what kind of animals are these trimmings taken which you obtain from the hide dealers?

A. They are mostly cattle trimmings.

X Q. 34. Are any of them from other animals?

A. There may be a few goat and sheep trimmings.

X Q. 35. Anything else?

A. Not that I can think of.

X Q. 36. From what kind of animals are these scraps produced which you get from the tanneries?

A. Cattle, goats, sheep, pigs, and rabbits. I think that is about all.

X Q. 37. Is the stock which you use some of it wet and some of it dry?

A. Yes, sir.

X Q. 38. Do you treat the stock just the same whether it is wet or dry?

A. Yes.

X Q. 39. Why do you lime it?

A. To plump it, open the pores, and neutralize various animal matter that would be detrimental to the glue.

X Q. 40. Did you ever make any glue from unlimed stock?

A. No, sir; except that we have made glue from paper size, which had been limed and washed previous to our obtaining it. By paper size I mean pieces of hide cut into shreds, mostly being imported into this country.

X Q. 41. How did you treat such pieces of hide?

A. We soaked them in water and then boiled them.

X Q. 42. Did you get good glue from them?

A. If soaked sufficiently to reduce them to the state of our ordinary prepared stock we got very fair glue. We simply soak in water, as the stock contains no impurities which it would be necessary to remove.

X Q. 43. How long did you boil these hide pieces?

251 A. About three hours on the first water; the liquor resulting from which was then drawn out, fresh water added, and boiled about the same time.

X Q. 44. Is what you call paper size what is sometimes known in the market as paper-makers' stock?

A. I think it is. I have known such articles for sale in the market ever since I have been in the business.

X Q. 45. Does such paper-makers' stock require any process in making glue therefrom except to soak it and boil it?

A. As the washing and preparing has already been done this is all that is necessary.

X Q. 46. Have you ever experimented in making glue from stock that had not been limed?

A. No, sir.

X Q. 47. Do you carry on the business at your factory substantially in the same way that it was carried on when you first went into the business?

A. Yes, sir.

X Q. 48. How many grades of glue do you make?

A. About ten.

X Q. 49. What is the difference in the market price of these grades to-day, speaking generally, so much for the best and so much for the poorest?

A. Between the best and the poorest that we manufacture there is a difference of about 7 or 8 cents per pound. The best glue that we manufacture is worth about 17 cents per pound, the poorest about 10 cents.

X Q. 50. What are your poorest glues used for?

A. For different purposes; largely for oil cloths; to oil-cloth factories for stuffing.

X Q. 51. What are these grades of glue made from?

A. That is a question I do not care to answer, as it is one of our secrets.

X Q. 52. Do you make them from cattle's feet?

A. We have never used cattle's feet at all.

252 X Q. 53. Do you sell glue in any state except in its dried state?

A. We sell it in the jelly and also liquid glue made from fish stock.

X Q. 54. To whom do you sell it in these conditions?

A. We sell the jelly and liquid glue in the market for the same purposes as hard or dried glue.

X Q. 55. How long have you been so selling it?

A. For three years.

X Q. 56. In what condition do you put up the jelly glue?

A. We cool it and pack it in barrels.

X Q. 57. From what is this jelly glue made?

A. From the same stock as the dried glue and made in the same way.

X Q. 58. What is the difference between it and the dried glue?

A. I don't quite understand the question.

X Q. 59. Is there any difference, except one is in the dried state and the other is in the jelly state?

A. The principal difference is that the jelly glue contains more gelatine than the same weight of jelly glue would contain if dried, and consequently will do more work.

X Q. 60. What is the proportion of water and gelatine to which you ordinarily reduce your jelly before you cut it up into slices ready for drying?

A. I cannot state the exact proportion. In our best glue we have more water, in our poorest glue less water. In summer we have less water than in winter, the object being to have the jelly sufficiently hard to cut and spread on the nets with economy.

X Q. 61. In making the jelly glue for sale, if I understand you rightly, you reduce it to a thicker jelly than you ordinarily use in making jelly for slicing?

A. Sometimes I do and sometimes not, depending on the customers.

X Q. 62. Explain what you mean, giving the names of the customers and for what they use the jelly glue.

A. I cannot answer this question without exposing my
253 customers' names and trade secrets.

X Q. 63. For what purposes do the customers want the jelly thick and for what purposes do they want it thin?

A. I cannot answer this for reasons stated above—already stated.

X Q. 64. Do you sell any of this jelly glue to paper-makers?

A. The same answer.

X Q. 65. Do you sell any of it to wood-workers of any kind?

A. I object to answering these questions, as it may give information to my competitors.

X Q. 66. Do you sell any of it to be used for lining barrels or for stuffing oil-cloth carpets?

A. The same answer.

X Q. 67. Do you decline to give the names of the parties to whom or the purposes for which this glue in a jelly form is sold by you?

Objected to on the ground that the witness has already given his reasons for withholding his answer.

A. Same answer.

X Q. 68. How long will this glue in the jelly form keep?

A. In cold weather it will keep a long while—if it is cold enough to freeze it up it will keep as long as it is frozen. In warm weather it would keep but two or three days, unless some preservative is added.

X Q. 69. Do you generally add some preservative to it?

A. This question I cannot answer for reasons stated above.

X Q. 70. Does the addition of these preservatives deteriorate the adhesive qualities of the glue?

A. Some preservatives will deteriorate the adhesive qualities, others will not.

X Q. 71. Do you sell glue in the jelly form both to dealers and consumers?

A. Yes; but mostly to consumers.

X Q. 72. What dealers keep your glue for sale in the jelly
254 form?

A. I will name one—Charles Townsend, of New York, 276 Pearl street—but it is not usually kept in stock, but ordered by dealers when they receive orders for the same, as it is very bulky and of small value per pound.

X Q. 73. What is its price per pound?

A. From 1½ cents to 3½ cents, according to the quality and percentage of glue it contains.

X Q. 74. Could you, instead of selling the glue in this jelly form, take it from the barrels and slice it up and dry it?

A. Yes; if it was necessary.

X Q. 75. Why don't you do this?

A. Because there is no need of putting the jelly into barrels if I desire to dry it.

X Q. 76. Why do you not, instead of putting this glue into the barrels and selling it in the jelly form, slice it and dry it and sell it in the dry form?

A. Most all of our glue is sliced and dried. The demand for jelly glue is comparatively small compared with that of our other glues.

X Q. 77. You could slice and dry it if you wanted to without any other change?

A. Yes; unless it had been prepared for some especial purpose, which might make it impossible to do so.

X Q. 78. Is this glue which you sell in jelly form suitable for any purpose for which a similar quality of dry glue would be useful?

A. I think it is.

X Q. 79. Why is glue dried?

A. For facility in transporting, and also because the trade demands it in that form, although a demand for jelly glue is increasing rapidly.

X Q. 80. How long will dry glue keep?

A. If not allowed to become moistened it would keep for years, perhaps for centuries.

X Q. 81. What is the difference between what is known in the market as size and your jelly glue?

A. The term "size" is applied to jelly glue, liquid glue,
255 and also paper stock, as well as some grades of glue which are used for sizing and is rather indefinite.

X Q. 82. What is the meaning of the word sizing as you use it in your last answer?

A. A glue in some form which is intended to form a surface on some material, such as paper, cloth, or oil barrels.

X Q. 83. You mean on the outside of oil barrels or inside of oil barrels or both?

A. Inside of oil barrels.

X Q. 84. Then sizing, as I understand you, may mean glue in a dry state or in a jelly state or in a liquid state?

A. It would properly apply to glue in a jelly or liquid state. In my answer above I might more properly have called dry glue used for sizing purposes a sizing glue and think that would be a more generally used term for it.

X Q. 85. Is your glue in the jelly form ever sold under the name of size or sizing?

A. Yes.

X Q. 86. Is this glue in jelly form made both of good quality and poor quality?

A. Usually the medium and best qualities.

X Q. 87. What quality of jelly glue or sizing is used by paper-makers?

A. The best.

X Q. 88. If this jelly glue or sizing which is used by paper-makers were cut in slices and dried what quality of dried glue would it make?

A. It would make a good glue. By paper-makers I refer to writing-paper manufacturers.

X Q. 89. How long have you made and sold your so-called liquid glue?

A. Between two and three years.

X Q. 90. In what shape do you sell and put up this liquid glue?

A. In barrels, cans, and bottles.

X Q. 91. To whom is it sold?

A. To the trade in general—both consumers and dealers.

X Q. 92. For what purposes is it used?

A. For most purposes that dry glues are used for.

X Q. 93. It is equally useful for such purposes?

A. It is usually thought so.

256 X Q. 94. From what is it made?

A. I don't want to say for reasons stated above.

X Q. 95. How long will it keep in this liquid form?

A. That depends on the amount and kind of preservatives used.

X Q. 96. Is it made from the same materials that you make your dry glue and your jelly glue?

A. I cannot answer the question for reasons stated above.

X Q. 97. Do you sell this liquid glue by the pound or by the measure?

A. Usually by the measure.

X Q. 98. If you wish to take this liquid glue and reduce it to a jelly form and then slice and dry it, could you do so?

A. No.

X Q. 99. Why not?

A. Because it is treated especially to make it liquid.

X Q. 100. Is what is contained in Milligan's Exhibit No. 1 glue?

A. No.

X Q. 101. Why not?

A. Because it will not do the work that glue will do; neither is it like glue in appearance.

X Q. 102. Will it jelly?

A. I don't think it will.

X Q. 103. Is it sizing?

A. No.

X Q. 104. Is it glue in any form?

A. I shouldn't call it so.

X Q. 105. Is it gum?

A. Not even gum.

X Q. 106. What is gum, as you have used it above?

A. Gum is a glue which from cause, usually imperfect manufacturing, loses most of its property as glue and will not, even when dried, retain its hardness in an ordinary atmosphere.

X Q. 107. What is such gum worth per pound in the market?

A. I don't know it as a marketable article.

X Q. 108. Have you ever known any of it sold or for sale?

A. I have known of it for sale, but never knew of any of it sold.

257 X Q. 109. Would what is Milligan Exhibit No. 1 be useful for any purposes for which glue is useful?

A. None that I know of.

X Q. 110. Did you ever make any such stuff at your factory?

A. I never did.

X Q. 111. Have you ever lined any oil barrels with glue?

A. I never did. All I know about it is from information?

X Q. 112. Have you ever examined inside of any that had been lined?

A. Yes.

X Q. 113. Where?

A. In Boston.

X Q. 114. When?

A. Some five or six years ago.

X Q. 115. With what kind of glue were they lined?

A. I do not know. I examined them for the purpose of seeing how glue acted on the inside of the oil barrels.

X Q. 116. Do you know what is the proportion of water and glue which is used in the mixture with which oil barrels are lined?

A. I think it is about one to five.

KING UPTON.

Sworn to before me this 3rd day of May, 1888.

J. A. SHIELDS,
Examiner, &c.

258 United States Circuit Court, Southern District of New York.

EDWARD W. LEGGETT
vs.
THE STANDARD OIL COMPANY.

Examination of witnesses taken on behalf of complainant, pursuant to annexed notice, before John A. Shields, examiner of this court, on the 2d day of May, 1888, 2 o'clock p. m.

Present: E. M. Felt, Esq., and Samuel C. Reed, Esq., for complainant; Chas. C. Beaman, Esq., for defendant.

THOMAS P. MILLIGAN, a witness produced on behalf of the complainant, being duly sworn, testified as follows:

Q. 1. What is your name, age, residence, and occupation?

A. Thomas P. Milligan; age, 46; residence, South Orange, New Jersey; occupation, manufacturer of gelatine, glue, and sizing.

Q. 2. How long have you been engaged in their manufacture?

A. I have been manufacturing nearly fourteen years.

Q. 3. And where?

A. South Orange, Newark, and New York, and Holyoke, Massachusetts.

Q. 4. What stock have you used as a basis of your manufacture?

A. English hide cuttings, coney skins, hare, nutria, and the stock from the tanneries.

259 Q. 5. Have you recently, at the request of plaintiff, made any experiment with what is known as tanners' stock? If so, please state in detail what you did and when and where you did it.

A. I have. Day before yesterday I sent to Halsey & Smith's tannery in Newark and obtained a pailful of their stock direct from their beam-house. I weighed one pound of this stock yesterday morning, placed it in a vessel, covered it with water, put the vessel over a kerosene stove, subjected it to the heat from this stove for about five hours. I took nothing from the stock but a very small portion of the grease that floated on top. I added nothing to it but the water, which I have described. The result was a mass of corruption, something utterly worthless, and not glue in any sense of the term. I produce the sample here.

Q. 6. Did the process which you employed produce the best results that could be obtained from the stock that you used as far as obtaining any glue from it was concerned?

Objected to as leading.

A. Oh, no; the sentence is rather involved.

Q. 7. How could you have obtained any different result from the

same stock? By that I mean by using the same stock, in the same way, and without any other or different treatment.

Same objection.

A. I know of no way to make anything better from the stock treated in that way.

Q. 8. Was the stock that you used what is known in the trade as tanners' stock?

Same objection.

A. Yes.

Q. 9. Was it limed?

A. I presume so. The hair was off, which is very good evidence that it had been in the lime.

260 Q. 10. And what should you say that this product was?

A. I should hardly know what to call it; sewage would be a good name.

Q. 11. Is it in any sense glue or does it show any of the properties of glue?

Same objection.

A. No; it does not.

Q. 12. Is it, in your opinion, useful or adaptable for any of the purposes or uses to which glue can be put?

Same objection.

A. No; it is not.

(Bottle offered in evidence and marked Complainant's Exhibit Milligan's First Experiment, May 2, 1888, J. A. S., ex'r.)

Q. 13. Have you also made any other experiment with the same sort of stock as a base? And, if so, please state the same in detail and when and where.

Same objection as to the first part of the question.

A. I have made no especial experiment; I produced some sizing made in the regular course of my business from similar stock, properly treated, and as near as possible the sample shown contains the same weight of stock that the first sample contains.

Q. 14. Please state what you mean by properly treated.

A. The stock is washed thoroughly and dried; it is then treated to a hot alkali bath, then washed in hot water, then immersed in a bath of weak alum water, redried, then soaked and boiled.

Q. 15. And what has such treatment accomplished; what has it done to the stock?

A. It has removed the injurious properties contained in the
261 stock; by injurious properties I mean those acids and acrid secretions natural to the hide, the salt, lime, and the grease to a large extent, all of these properties being recognized as injurious in the manufacture of jelly.

(Witness now produces a jar containing the product of the last operation.)

Q. 16. And does this jar contain glue or what would you name it?

Same objection.

A. It is the form of glue I designate as size; I will state here that there is a small portion of alum added to this as a preservative.

Q. 17. Then, is this a useful product?

A. It is.

Q. 18. Is it useful for the purposes for which glue is used?

Same objection.

A. For some of the purposes it is.

Q. 19. Please state them.

A. It is suitable for sizing writing paper, for sizing carpets, and other kindred manufactures.

Q. 20. If you had treated the stock used by you in making your first experiment in the same manner as you did the stock used in making the product contained in this second jar, what would have been the result?

A. I would have produced the same quality and quantity of sizing as in the second exhibit.

Jar put in evidence and marked Milligan's size, May 2, 1888, J. A. S., ex'r.

Cross-examination of witness adjourned until *until* Friday, May 4, 1888, at 2 p. m.

Further examination of witnesses in this case adjourned until Thursday, May 10, 1888, at 11 a. m.

262 MAY 10, 1888.

Met pursuant to adjournment.

Present: Counsel as before.

Cross-examination of witness by Mr. C. C. BEAMAN:

X Q. 22. From what did you make Exhibit Milligan's First Experiment?

A. From stock obtained from Halsey & Smith's tannery.

X Q. 23. What is such stock called in the trade?

A. It is called tanners' stock, tanners' bushel stock, tanners' fleshings.

X Q. 24. Do these terms you have just used all mean the same thing in the trade?

A. Tanners' fleshings and tanners' bushel stock would always mean the fresh stock from the tannery; by fresh I mean the wet stock. Tanners' stock simply might mean the wet stock or the dry stock, but it would mean the refuse pieces and trimmings and fleshings made by the tanner.

X Q. 25. Describe particularly the material with which you made this experiment.

A. They were pieces trimmed from the hide, including the thin shavings or fleshings proper, cut from the inside of the hide. When the hide reaches the beam-house it is then trimmed and fleshed; the pieces I used would fairly represent these trimmings.

X Q. 26. What is done by the tanner to the hides before they reach the beam-house?

A. I cannot say positively, not being a tanner, except that the hides are usually limed to remove the hair.

X Q. 27. Have you no further knowledge or information on this subject?

A. I believe the tanners usually soak the hide in what is called bate liquor; I think it is usually made of dog manure.

X Q. 28. Were these pieces when you got them saturated with moisture so as to be what you call wet?

A. Yes; they were.

263 X Q. 29. Did you get them yourself?

A. I did not. I sent for them.

X Q. 30. How long since they had been cut off before you tried your experiment?

A. I cannot say.

X Q. 31. What had been done to them during that period?

A. During what period?

X Q. 32. From the period when they had been cut off until you first saw them?

A. I do not know of anything.

X Q. 33. Have you ever made glue from any such scraps?

A. Yes; I have.

X Q. 34. How much?

A. By glue do you mean "dry glue"?

X Q. 35. I mean glue in any form?

A. I cannot say.

X Q. 36. In what form did you ever make glue from such stock?

A. I have made it in the form of size, and in the dried cake glue of commerce.

X Q. 37. Is such stock one of the principal stocks you have used in making glue?

A. I have used very little comparatively of stock of this kind until within the past six months.

X Q. 38. How much of it have you used during the last six months?

A. Do you mean how much have I boiled into glue or how much have I treated for glue stock?

X Q. 39. How much have you boiled into glue?

A. I cannot say.

X Q. 40. How much have you treated for glue stock?

A. I cannot say.

X Q. 41. Have you bought ten tons of it?

A. Yes.

X Q. 42. Do you consider it a good stock to make good glue from?

A. I do.

X Q. 43. Have you made good glue from it?

A. I have.

X Q. 44. Had you before you tried this experiment?

A. I had.

264 X Q. 45. How?

A. By the process described in answer to direct interrogatory No. 14.

X Q. 46. Did you expect that the experiment you made with this stock would produce glue?

A. No, sir.

X Q. 47. Why not?

A. Because it contained substances injurious.

X Q. 48. Name them.

A. The natural secretions of the hide—grease, lime. I presume other things.

X Q. 49. Can't glue be produced by simply boiling pieces of fresh hide that had never been limed, but simply cut from the animal?

A. I think that would depend upon the animal from which the hide was cut very largely. I think some of the hides from small, lean animals might be used, but as I have never tried anything in the raw state but the coney, hare, and nutria I cannot say positively what could be produced from the hides of other animals.

X Q. 50. Have you ever made or tried to make any glue from coney, hare, and nutria skins in their raw state?

A. I have.

X Q. 51. With what result?

A. It was not satisfactory except for purposes where color and purity were no object.

X Q. 52. How did you make this glue from these skins in the raw state?

A. That question I decline to answer, for the reason that I have processes of my own which I do not care to divulge.

X Q. 53. Did you lime them?

A. I did not.

X Q. 54. What did you do with the glue that you got in this way?

A. I sold it in the form of size.

X Q. 55. Do you think you could have made glue by boiling this tanners' stock which you experimented with if it had contained no lime?

A. I do not think so.

X Q. 56. Why not?

A. Because, as I have stated, the hide contains many im-

265 purities which operate under the boiling process to the destruction of the gelatine.

X Q. 57. Have you ever experimented in making glue from pieces of hides or skins that had not been treated in lime or some other special way?

A. No; except in the case of the small hides already mentioned.

X Q. 58. Were not those small hides treated by you in a special way which you decline to disclose?

A. Some of them were; some special treatment was in the boiling process.

X Q. 59. What was the peculiarity of the boiling process?

A. That I must decline to answer for the same reason stated before.

X Q. 60. Did you boil them a longer or shorter time than usual for boiling other kinds of stock?

Complainant's counsel objects to this question and to this line of examination on the ground that it is not cross-examination, and that defendant's counsel by so doing makes the witness his own, and this objection is continued to all such examination without further repetition.

A. I decline to go into my process of glue-making.

X Q. 61. Are secrets valuable property in glue-making?

A. We try to make them so.

X Q. 62. Is there much competition in the glue business?

A. Yes, sir.

X Q. 63. Have you ever used dry tanners' scraps in making glue?

A. I think I did a number of years ago, but the results were unsatisfactory, and I never repeated the test to my best recollection.

X Q. 64. What did you get by these tests?

A. Nothing of any value, as I remember.

X Q. 65. Nothing that you sold?

A. I think not.

X Q. 66. How long have you been in the glue business?

A. About twenty years, and I have been manufacturing fourteen years.

266 X Q. 67. With whom were you before you manufactured, yourself?

A. The Milligan Higgins Glue Company.

X Q. 68. In what forms did that company make and sell glue?

A. The company did not, strictly speaking, make any glue; they dealt in the article and ground it in the dry form.

X Q. 69. When did you first begin to have anything to do with the actual manufacture of glue?

A. In 1874.

X Q. 70. In what forms have you made and sold glue?

A. In the jelly as gelatine and size.

X Q. 71. Have you never made or sold it in the dry form?

A. I have made it, but I have never sold it in the dry form.

X Q. 72. For what purposes have you made it in the dry form?

A. In a small way for my own uses and experimentally.

X Q. 73. What is the difference between what you call jelly or gelatine and size?

A. What I call gelatine is a purer form of the same thing.

X Q. 74. What does size contain that gelatine does not?

A. It contains dirt and other impurities.

X Q. 75. Does gelatine and size differ from each other except as different grades of dry glue differ from each other?

A. Not as I distinguish them.

X Q. 76. How many grades of gelatine and how many grades of size do you make?

A. One grade of each, usually.

X Q. 77. What is the price of each per pound—on an average?

A. That would depend upon the strength of each.

X Q. 78. What do you mean by strength?

A. The amount of water contained in it.

X Q. 79. What is the variation of the amount of water contained in these different gelatines and different sizes?

A. From about four parts of water and one of glue to about
267 eight parts of water and one of glue.

X Q. 80. Assuming that the gelatine and size were about the same strength, what is the difference in price?

A. The gelatine is about twenty-five per cent. higher priced than size.

X Q. 81. For what purposes are these gelatines and sizes used?

A. In my business I sell the gelatine to the writing-paper manufacturers; the sizing I sell to the trade generally.

X Q. 82. Do you sell both gelatine and sizing to the trade and to consumers?

A. To the consumers generally.

X Q. 83. For what purposes do the paper-makers use your gelatine?

A. For giving a stiffness and finish to writing paper.

X Q. 84. What is commonly called sizing the paper?

A. Yes, sir.

X Q. 85. Do not the writing-paper makers commonly call size what you call gelatine?

A. Yes, sir.

X Q. 86. What is the object of adding alum to gelatine or size?

A. It causes it to thicken, tends to preserve it, and is itself, when applied to writing paper, a size or a stiffener.

X Q. 87. How long have you known gelatine or size to be made and sold as an article of trade in the market?

A. About twenty years.

X Q. 88. Can you name anybody that used to make and sell it before you began in 1874?

A. I recall a Mr. Carew, who used to make and sell sizing; I can think of no other for the moment.

X Q. 89. Did not this Mr. Carew have his factory at Rahway, N. J.?

A. Yes, sir; he did.

X Q. 90. Is the gelatine and size that you make and sell suitable to do any kind of work that could be done with the same quality of glue if it had been dried, and then by remelting reduced to the same strength?

A. Yes; if the alum is not added to it.

268 X Q. 91. Do you always add alum to it?

A. No.

X Q. 92. How did the gelatine or size that Mr. Carew made and sold compare with what you were making and selling for 14 years?

A. My recollection of Mr. Carew's size is that it was an opaque, muddy character. Mine is clear and superior.

X Q. 93. His was glue, was it not?

Objected to unless the witness has seen and personally examined it.

A. He may have made glue. I understood you were referring to his size.

X Q. 94. Is not size a form of glue?

A. It may be if the size is made by soaking and melting dry glue.

X Q. 95. Is not the size as you sell it a form of glue?

A. I think it may be so considered.

X Q. 96. Do you not so consider it?

A. Yes; I think I do.

X Q. 97. Do you not consider that the size that Mr. Carew made and sold was a form of glue?

A. It might be so considered.

X Q. 98. Do you so consider it?

A. In a broad way I do. When I speak of glue as a glue-maker I always refer to the dried article.

X Q. 99. Then you are not a glue-maker?

A. I don't think that follows.

X Q. 100. Are you a glue-maker?

A. I consider myself such, having made enough glue to deserve the title.

X Q. 101. How much glue have you made and sold per year during the last 14 years?

A. I answered that question before. I had sold no glue as glue; that what I had made I made for my own purposes and experimental.

X Q. 102. How much glue in the form of gelatine and size have you made and sold per year during the past 14 years?

A. I cannot say; but from the year beginning in the
269 spring of 1880 to the spring of 1881 I made and sold for the Standard Oil Company, Lombard, Ayres & Company, Charles T. Pratt & Company about a half million pounds.

X Q. 103. Pounds of what?

A. Sizing.

X Q. 104. How did this differ from the sizing that you had been making and selling since 1874?

A. It was stronger and darker.

X Q. 105. Any other difference?

A. Not so clear; not so pure.

X Q. 106. Any other difference?

A. Not that I can think of.

X Q. 107. What was it used for by these people?

A. I sold it to them to line their oil barrels with. I presume they used it for that purpose.

X Q. 108. Have you ever been sued or threatened with suit by Mr. Leggett, the plaintiff in this suit, for making and selling glue in the form of gelatine or size to the Standard Oil Company to be used by it in lining oil barrels?

A. No, sir; never have.

X Q. 109. Has any of the gelatine or size you have made during the last fourteen years been used by cabinet-makers in sticking the pieces of wood together?

A. Not that I am aware of.

X Q. 110. Would it be useful for such purposes?

A. If it had no alum in it, it would be.

X Q. 111. What proportion of the gelatine or size you have sold has contained alum?

A. It would be impossible for me to say.

X Q. 112. As much as half of it?

A. I cannot say.

X Q. 113. As much as one-quarter of it?

A. If you want me to guess I will say that I have probably make twice as much gelatine and sizing and perhaps four times as much that contained alum than I have that contained no alum.

X Q. 114. In the experiment number one did you not add much more water than you usually do in making glue from wet stock?

A. I never used this wet stock.

270 X Q. 115. Do you not think you would have had better results if you had added less water or had pressed out some of the water or had given the stock a good rinsing so as to take out some of the injurious lime?

A. I cannot make a comprehensive answer. I will add that I made the best results that could be obtained by any one using this wet stock just as it comes from the tannery.

X Q. 116. Do you not think you would have obtained a better result if you had simply given this wet stock a thorough rinsing before you experimented with it?

A. Yes, sir; I think it would have been a shade better, because every impurity removed would have improved the result.

X Q. 117. Was there anything in the result of experiment number one that you would call gelatine, glue, or size?

A. No, sir.

X Q. 118. Was there anything there that would make a jelly when cold?

A. I think not.

THOS. P. MILLIGAN.

Sworn to before me—

JOHN A. SHIELDS,
Examiner, etc.

271 United States Circuit Court, Southern District of New York.

EDWARD W. LEGGETT
vs.
THE STANDARD OIL COMPANY. } In Equity.

Testimony for complainant, taken pursuant to the 67th rule in equity, as amended, before Henry A. Clark, Esq., special examiner.

ERIE, PENN., *April 28th*, 1888—9 a. m.

Met pursuant to notice.

Present: Samuel C. Reed, Esq., of counsel for complainant; Wm. S. Beaman, Esq., of counsel for defendant.

GEORGE W. GRAY, being duly sworn and examined on behalf of the complainant, deposes and says:

Int. 1. What is your name, age, residence, and occupation?

A. George W. Gray; residence, East 11, 208, Erie, Pa.; sixty-three years of age 24th of next November.

Int. 2. How long have you been a resident of Erie?

A. I came to Erie from Washington township, in Erie Co., 1847, and have resided here since.

Int. 3. What year did you first become interested in the oil business?

A. 1861.

Int. 4. Have you since that time been interested in the oil business?

A. Ever since that time.

Int. 5. In what way?

A. Manufacturing oil principally.

272 Int. 6. Were you ever employed by the firm of D. Kennedy & Co. in the city of Erie; and, if so, when, and what business?

A. I was with them, employed by them in the manufacturing of oil, from the spring of 1863, about one year and a half.

Int. 7. What were your duties while so employed by them?

A. I had the entire charge of manufacturing and the whole charge of gluing the barrels and the putting of the oil into the barrels after they were glued.

Int. 8. Who composed the firm of D. Kennedy & Co.?

A. David Kennedy, Clemmens Von Busick, and John Berst.

Int. 9. While you were employed by the firm of D. Kennedy & Co. did they always glue their own barrels; and, if so, in what way?

Objected to as leading.

A. We always glued our own barrels. Our barrels always came to us with a vent-hole in the bung stave (new barrels).

Int. 10. In what way did you glue them?

A. With melted glue. We took hard glue that we received in barrels, melted it to a proper consistency to glue barrels with, and glued them.

Int. 11. Did the firm of D. Kennedy & Co., while you were with them, ever purchase from one Warren W. Green, of Richmond, Crawford Co., Pennsylvania, or from any one else, any oil barrels that were already lined with glue before they were purchased by the firm?

Objected to as leading.

A. No, sir.

Int. 12. During your residence in Erie from 1861 to 1870 were you acquainted with all the oil-refiners doing business at that time?

Objected to as leading.

273 A. I was personally acquainted with their works, although not personally acquainted with all the refiners, but I knew their firms.

Int. 13. Did you ever know any one of them who used glue for the purpose of lining their oil barrels use it in any other way than by melting hard glue?

Objected to as leading.

A. No, sir; I never did.

Int. 14. Did you ever know any oil-refiner in Erie from 1861 to 1870 to buy barrels that were already lined with glue?

A. I never did.

Int. 15. Did they, to your own knowledge, always line their own barrels?

Objected to as leading.

A. Always. I never knew any who did not line their own barrels.

Int. 16. Did you ever hear or know of a firm of oil-refiners in Erie named Kennedy & Gagan?

A. There never was any such firm.

Int. 17. Are you positive of that?

A. I never heard of any such firm as that.

Int. 18. Where was the refinery of D. Kennedy & Co., with whom you were employed, as you said before, from 1863, situated?

A. Near the corner of State and 18th streets, south of the Morton house, situated on, we called it, the Waterford plank road. The works came nearly to 18th street on the east side of State street, about 65 feet from 18th street, I think.

Cross-examination by W. S. BEAMAN:

X Int. 1. What is your present business, Mr. Gray?

A. Oil business.

X Int. 2. Are you a producer or dealer, or what?

A. I am a dealer at present.

X Int. 3. Have you a store in Erie?

274 A. I have a storage-room at the junction of 11th street and P. & E. R. R.

X Int. 4. Where do you get your oil?

A. I get some of it in Titusville and some of it in other places.

X Int. 5. Do you get most of it from Titusville?

A. I don't know; I could not tell without looking at the book, and that I have not with me. I think I have got more from Titusville.

X Int. 6. How long have you been in this place on 11th street?

A. Since the fall of 1887.

X Int. 7. Where had you been before?

A. I had been with the Thomas Brown Oil Co. in this city—Erie. I think I was there between two and three years, helped build the works, and was there when they sold out to the Standard Oil Co., I suppose. I had a general oversight of their business, which was refining of oil, under Thomas Brown's instructions.

X Int. 8. Where and how were you engaged prior to going with Thomas Brown Oil Co.?

A. Standard Oil Co., on East 10th street, in the city of Erie, junction of East 10th street with P. & E. R. R.

X Int. 9. What were your duties when you were with the Standard Oil Co.?

A. Charge of the works—superintendent.

X Int. 10. Did you go directly from the Standard Oil Co. to the Thomas Brown Oil Co.?

A. I did.

X Int. 11. When was that?

A. I think it was April 1st, three years ago.

X Int. 12. How long had you been with the Standard?

A. I do not recollect the number of years I was with them.

X Int. 13. Give your best recollection.

A. It must have been three or four years; I do not know but it was longer.

X Int. 14. Why did you leave the Standard Company?

A. The Standard Co. proposed a contract for me to sign.
275 I did not sign it. Mr. S. C. Lewis, their agent, said if I did not sign the contract they did not want myself and son. We did not sign it. My son tendered his resignation. Mr. Lewis says to me, I wish that you would stay a spell, for there is a certain class of goods to be worked up. I said very well, and stayed, I think, till the 1st of April.

X Int. 15. Prior to going with the Standard, with whom had you been?

A. Thomas Brown; just plain Thomas Brown. I cannot say how long I was with him. I had charge of his works; they were situated on East 10th street, in Erie.

X Int. 16. Please state to your best recollection how long you were with Mr. Brown.

A. I think he ran it about two years; I am not positive.

X Int. 17. You cannot tell exactly how many years he ran it?

A. No; not before the consolidation.

X Int. 18. Where had you been before going with Mr. Brown?

A. I was at Buffalo, manufacturing oils with Thayer & Riddell; in charge of their works about two years.

X Int. 19. Who were you with before then?

A. Wallace & Barnes, in the city of Erie, at the mouth of Mill creek; had charge of their works, manufacturing oil.

X Int. 20. How long were you with them?

A. I can't tell; I think it was about two years.

X Int. 21. Can you tell exactly how many years you were with them?

A. I can't exactly without my books.

X Int. 22. Do you remember the year you went with them?

A. I do not.

X Int. 23. Nor the year in which you left them?

A. No, I do not; they sold out in March or April; I do not recollect the year.

X Int. 24. Where were you prior to going with Wallace & Barnes?

A. I was on corner of French and Eighteenth streets, manufacturing oil for Gray & Baker, myself being a member of the firm.

276 I can't tell for how many years. I can't remember the dates; about two to three years.

X Int. 25. Do you remember the year when the firm commenced or ended business?

A. No; there was no written partnership or agreement.

X Int. 26. Where were you before you formed this partnership?

A. Part of the time I was with Kennedy, part of the time on Miller farm.

X Int. 27. Anywhere else?

A. 6 months, I guess, in Mackey, Ohio.

X Int. 28. What year was that?

A. That was in 1860. It was when Fort Sumpter was fired. I came home to Erie afterwards—the next day. I came to Erie. My family was then living in Erie.

X Int. 29. What had been your business, if any, in Mackey, Ohio?

A. Drilling—producing oil.

X Int. 30. After you came back to Erie from Mackey, Ohio, what did you do here?

A. I painted a house for Geo. W. Colton. I recollect that distinctly. I went into the oil business.

X Int. 31. Please state what, if any, employment you secured after your return from Mackey, Ohio, with whom you secured it, and what it was.

Objected to as incompetent, immaterial, and irrelevant and not proper cross-examination, and that the witness becomes defendant's own witness.

A. Well, it was part of the time with Kennedy & Company. A part of the time was with Dalzell Bros. a short time. Along about that time it was of short duration with any of them. I moved a refinery from here to the Miller farm; took about six months. The Miller farm is about six miles below Titusville.

X Int. 32. Whose refinery did you remove to the Miller farm?

A. One of the parties' name was Sherwood. The refinery
277 stood here between Parade and German—between Fifteenth and Sixteenth streets.

X Int. 33. In what year did you remove the refinery?

Same objection.

A. I do not remember the year.

X Int. 34. Did you remove it before or after going to work for Kennedy?

A. My recollection is that it was before.

X Int. 35. You do not know, positively, whether it was before or after?

A. No, sir; I could not say.

X Int. 36. When you removed this refinery was there any railroad up Oil creek?

Same objection.

A. There was a railroad from Titusville to Corry. That was as far as it went.

X Int. 37. Before you went to work for Kennedy, in Erie, were you in any other regular employment or business after returning from Mackey, Ohio?

Same objection.

A. My recollection those times were somewhat mixed up, owing to the war—the oil excitement. I know it was pretty lively times.

X Int. 38. Question repeated.

A. I can't be sure. I can only give my recollection.

X Int. 39. What is your recollection about it?

Same objection.

A. My recollection now is that when I left Dalzell Bros. I went to Kennedy's.

X Int. 40. Who were Dalzell Brothers?

Same objection.

A. They were producers. They lined, I think, in Pittsburgh.

X Int. 41. Where were their mills?

278 A. Some of them were on the McClintock farm—one on Wash. McClintock farm. I do not recollect where the others were. If I were to think some time I might locate name.

X Int. 42. In what capacity were you employed by Dalzell Bros.?

Same objection.

A. Looking after their interests.

X Int. 43. Where were your duties performed?

Same objection.

A. I was at Rouseville principal part of the time, then at Titusville; just as business called my attention.

X Int. 44. Where were your family residing at that time?

Same objection.

A. In Erie.

X Int. 45. How long were you employed by Dalzell Bros.?

Same objection.

A. It was a short time, a very short time. I do not recollect just how long.

X Int. 46. At what time of year did you enter their employ?

A. In the fall of the year, to my best recollection.

X Int. 47. At what time of the year did you leave them?

A. I left them in the spring. I am certain about that.

X Int. 48. Can you state in the spring of what year?

A. No; I cannot. It was after 1862, I think. My recollection is that it was in 1862, in the spring, that I left there. This is to the best of my recollection now.

279 X Int. 49. What did you next do after leaving Dalzell?

A. Next regular employment I went with Kennedy, here in Erie.

X Int. 50. Had you been employed at anything, in any way, prior to going to Kennedy's and after leaving Dalzell's?

A. Well, I don't recollect. I remember hanging some paper in my own house.

X Int. 51. Do you recollect doing any other work for any other parties during this time?

A. I do not.

X Int. 52. Do you recollect in what year you papered your house?

Same objection.

A. I think it was in '62; quite sure it was; one time, anyway. I papered it a good many times.

X Int. 53. What time of year was it you first papered the house after coming back from Dalzell Brothers?

A. Spring of the year.

X Int. 54. What year did you first go to work for Kennedy?

A. It was in 1862 or '63.

X Int. 55. Which year was it?

A. My impression is that it was in 1863, in the spring of the year.

X Int. 56. What were your duties when you first went to Kennedy's?

A. Fixing the refinery and repairing, ready to manufacture oil.

X Int. 57. What salary did you receive?

A. I do not remember what salary I did receive. In fact it was a mutual arrangement between us. I had an interest in the loss and profit; that was for the first year. I was not a partner.

X Int. 58. Did you receive orders from any one other than the firm?

A. No, sir.

X Int. 59. Can you state in what year you left Kennedy?

A. I left there in the fall. I staid there a year and a half; it was in the fall of the year that I left.

280 X Int. 60. Was it before or after the close of the war you left there?

A. Before the close of the war.

X Int. 61. Were you there when President Lincoln was assassinated?

A. No, sir; I was not.

X Int. 62. Do you remember where you were engaged when President Lincoln was assassinated?

A. At Petroleum Center, I recollect; I was there the day he was shot.

X Int. 63. Do you remember with what firm or company you were engaged at that time?

A. I was engaged in individual business.

X Int. 64. Who bought the oil barrels at Kennedy's when you were there?

A. Sometimes I did; sometimes Mr. Busick did; sometimes Mr. Kennedy did. When we wanted barrels I would order them in the absence of Mr. Buseck or Mr. Kennedy.

X Int. 65. When did Mr. Berst become a member of the firm?

A. I think he was one of the originators or organizers of the firm; I am not sure.

X Int. 66. Where did they get the first oil that they refined, if you know?

Objected to on the ground that it does not appear that the witness was present when the firm was organized.

A. I do not know anything about it.

X Int. 67. Do you know when the firm was organized?

A. No, sir; I do not.

X Int. 68. How did they line oil barrels while you were there?

Objected to on the ground that witness has already stated how they lined the oil barrels.

A. Lined them with glue. We took hard glue, put it into a kettle in the evening when we quit, let it soak over night; the morning following we would build a fire under the kettle and melt it up;
281 it would take but a short time then. After it was melted and reduced to the proper consistency we would line the barrels with the glue.

X Int. 69. How would you line them?

A. We would put from two to three gallons of hot glue with a tunnel or any way to get it in; we would then take the tunnel out, then we would put a plug into the bung-hole tight, then we would shake that barrel up, roll it over, and if there were any worm-holes or leaks we would plug them up; after we had found all holes in the barrel we would knock the plug out, put the barrel on a trough and let the glue drain out into the kettle from which we had taken the glue.

X Int. 70. Did you personally attend to this work while you were there?

A. I personally attended to it and did it myself; sometimes I helped; sometimes I did not. They were small works and did not

require much help; the stills were small; only ten or twelve barrels a day.

X Int. 71. How many men were employed at these works when you were there?

A. One man regularly employed besides myself. One man besides myself manufactured the oil, glued the barrels and filled them.

X Int. 72. What did the partners do while you were there?

A. Mr. Buseck would generally be around and in the office. We had a good deal of retail trade then and he looked after it.

X Int. 73. What did Mr. Kennedy do?

A. Mr. David Kennedy generally kept the books; sometimes did collecting. Mr. Berst was not there very often.

X Int. 74. You do not remember any one about there named Gagan while you were there?

A. There was an inspector named Gaggin who inspected every barrel of oil we shipped.

X Int. 75. Who was he? Where is he now?

282 A. He is dead. At the time he was Government inspector of oils. His first name was Richard.

X Int. 76. Did you always use new oil barrels at Kennedy's while you were there?

A. No, sir; sometimes we bought old barrels and used them, and always relined them when they had been previously filled. We never refilled any old barrels without relining them.

X Int. 77. Where did you buy your glue?

A. My recollection is that the principal amount was bought of Schall, here in Erie. I think his place was on German and Twenty-fifth streets. I am not sure he moved it down on the Buffalo road. He sold his place to his sons. He is now in Erie, near Twenty-fifth street, between French and Holland.

X Int. 78. What kind of glue did they buy to line barrels with?

A. Hard glue.

X Int. 79. What quality of glue?

A. It was a dark-colored glue.

X Int. 80. How did you come to be a witness in this case?

A. I do not recollect now. I recollect this, the first man I ever heard say anything about this case, this glue case, was a lame man. He asked me what glue are you using now. I told him the glue I was now using I always had used. I told him I was using hard glue. We call it stick glue. Sometimes it comes in flakes. It is always known commercially as hard glue. We have never used any other.

X Int. 81. State in a general way what happened at this interview.

A. About the first question after speaking about glue that I had used for barrels; after that he asked me if I knew of any oil firm in the city of Erie by the name of Kennedy & Gaggin. I told him no, sir; there never had been such a firm in the oil business in Erie, to my knowledge. Then I think he told me he had a patent;

283 that it had been infringed upon; that somebody had sworn

that they had sold Kennedy & Gaggin oil barrels lined with liquid glue. I told him I thought it was a mistake. He said these barrels came from Crawford county and from a man who lived in Crawford county, and he read me the man's testimony, and I think his name was Green. I have not seen the lame man since. I never saw him before. Afterwards I was requested to attend and give my testimony in this case.

X Int. 82. You have always lined your barrels with hard glue remelted?

A. Yes.

X Int. 83. What kind of a lining does it make, good or bad?

Objected to as not proper cross-examination, and that the witness becomes defendant's own witness.

A. Good; we had no trouble with barrels if properly lined.

X Int. 84. Did you have any trouble with barrels that you lined at Kennedy's?

Same objection.

A. I do not recollect of any trouble.

X Int. 85. When did this Mr. Gagan whom you have mentioned die?

A. I cannot tell you. He has been dead three years, I guess. He died in Connecticut. I helped bury him here in Erie.

X Int. 86. Was he ever in the oil business here in Erie?

Objected to as incompetent.

A. When Kennedy & Co. was organized I think he worked for them.

X Int. 87. Did he work for them while you were there?

A. No, sir.

GEO. W. GRAY.

Sworn to before me this 28th day of April, 1888.

HENRY A. CLARK,
Special Examiner.

284 Complainant's counsel wishes to have it recorded that Ransom H. Sargent, of Titusville, Penn., and Warren W. Green, of Richmond, Crawford Co., Penn., were present during the greater part of the time of the examination of the previous witness, and that the aforesaid Green participated in the examination by making suggestions to defendant's counsel, and that both said Sargent and said Green have previously testified on behalf of the defendant.

Complainant's counsel hereby gives notice to the defendant's counsel, now present, that on Monday next, on the 30th day of April inst. at 11 a. m., he will examine Mr. D. L. Clark, of Richmond, Penn., at the office of the special examiner, Henry A. Clark, Esq., heretofore appointed, and that he is invited to be present and cross-examined. Complainant's counsel hereby withdraws the notice of the examination of Mrs. Ira Clark, of Little Cooley, Penn., in Little Cooley, on the day above named.

CLEMENS VON BUSECK, being sworn, testifies as follows:

Int. 1. What is your name, residence, and occupation?

A. Clemens Von Buseck is my name; my residence is Erie, Pa.; I am 79 years of age; no occupation now.

Int. 2. How long have you been a resident of Erie?

A. Since 1832; during this time I have been only absent one year and a half.

Int. 3. Were you at any time engaged in the business of oil-refining; and, if so, when were you first interested in it?

285 A. We commenced in the month of May, 1861; the firm was D. Kennedy & Co.; I was a member of the firm. Mr. D. Kennedy and Mr. John Berst, with myself, composed the firm.

Int. 4. How long did you stay in the firm?

A. I staid in it till 1872.

Int. 5. Where was your refinery located?

A. It was located on State street, on the road that comes in from Waterford above the Morton house.

Int. 6. What part of the business did you attend to?

A. I attended to what was necessary; looked after the business generally: bought barrels and all those things.

Int. 7. How did you line your oil barrels?

A. We lined them with hard glue bought here in Erie; bought the glue, melted it and put it in hot and shook it up, rolled it around, turned it out, and let it dry.

Int. 8. Did you always line all your oil barrels in that way?

Objected to as leading.

A. We always did ourselves and in that way.

Int. 9. Did you ever buy any oil barrels that had been glued before you purchased them?

A. Not that I recollect; I never saw any or heard of any.

Int. 10. Would you have heard of them in all likelihood?

Objected to as leading.

A. I never heard of any. I would not have bought any because I would not have trusted them.

Int. 11. Did you ever see Warren W. Green, of Richmond, Crawford Co., who is now here present, before to-day?

A. No; not to my recollection.

Int. 12. Did you ever hear of any oil barrels being glued by any one in the oil-refining business and then sold so glued to the

286 oil-refiners in the city of Erie from 1861 to 1872?

A. No; I did not hear of such a thing.

Int. 13. Who had charge of the gluing of your oil barrels from the time you commenced business until Mr. George W. Gray came?

A. We always kept two hired hands who did the work. I do not remember their names.

Int. 14. Was there a man by the name of Gagan or Gaggin who had anything to do with the gluing of your barrels?

Objected to as witness has stated he is unable to state the names.

A. He had nothing to do with the gluing of the barrels; he attended to the refining of the oil.

Int. 15. Had he anything to do with the purchase of the oil barrels?

Objected to as leading.

A. He had nothing to do with the purchase of the oil barrels. We attended to all that ourselves.

Int. 16. Did you ever hear or know of any firm doing the business of oil-refining in the city of Erie named Kennedy & Gagan?

A. No, sir.

Cross-examination:

X Int. 18. How long did the firm of D. Kennedy & Co. continue under that style?

A. I don't exactly know. I judge it was until about 1865 or 1866.

X Int. 19. You do not remember the exact year?

A. No.

X Int. 20. What was the firm name afterwards?

A. Mr. Berst went out, but the style remained till 1872, when the firm failed.

X Int. 21. Who attended to the financial part of the business prior to 1866, when Mr. Berst went out?

A. David Kennedy.

287 X Int. 22. Did you personally during this time work in the refinery?

A. I worked; if there was anything to do I did it. I took in oil and emptied it.

X Int. 23. Do you remember Mr. Geo. W. Gray as working for you?

A. Yes, sir.

X Int. 24. What were his duties?

A. Refining oil.

X Int. 25. Anything else?

A. He didn't do anything else; he might have had some gluing of the barrels, I do not recollect.

X Int. 26. Was he employed on a salary?

A. Yes, sir; he worked on a salary.

X Int. 27. What kind of barrels did you use?

A. Well, we used the kind the coopers manufacture here. I guess they were made out of oak staves.

X Int. 28. Did you use any second-hand barrels?

A. We used second-hand barrels that were returned to us once in awhile.

X Int. 29. Did you refill all the second-hand barrels that were returned to you?

A. Well, sir, we steamed them out, we coopered them over, re-

lined them with glue, and filled them with oil, painted them over, and got the Government stamp.

X Int. 30. From whom did you get these second-hand barrels?

A. Got them from the groceries where we sold the oil; the barrels were returned.

X Int. 31. Did they—all the second-hand barrels—come direct to you from these groceries?

A. I could not say exactly.

X Int. 32. Were there not a good many second-hand barrels purchased by you from teamsters?

A. Not that I recollect; do not think we bought many second-hand barrels. We always relined every second-hand barrel with glue whenever we got them.

X Int. 33. Did you not sometimes exchange second-hand barrels for new ones?

A. Not that I know of.

288 X Int. 34. Where did you get the glue that you melted to line the barrels with?

A. Generally we bought it down here to Shalls', in Erie.

X Int. 35. You never saw any oil barrels that were lined with anything but melted glue, did you?

A. No.

X Int. 36. What kind of lining did the glue make that you used—good or bad?

A. It made a good lining.

X Int. 37. You never had any complaint from it?

Objected to as not proper cross-examination, and that the witness becomes de*de*fendant's own witness.

A. Not that I heard of.

X Int. 38. Were you ever in Richmond township, Crawford Co.?

A. No, sir; not that I remember.

X Int. 39. Between 1861 and 1871 how much of the time were you away from Erie?

A. Not any; I staid here all the time.

X Int. 40. Do you remember from whom you bought oil between 1861 and 1865?

A. No; I don't remember, because we bought at that time from different people. I do not remember their names. Sometimes it came by rail and sometimes by team.

X Int. 41. Do you remember when Mr. Gray left your place?

A. No; I do not remember. I can't give the year, time is so long ago.

X Int. 42. Do you remember the name of Mr. Gagan, whom you say worked for you? I mean the first name.

A. Richard Gagan.

X Int. 43. How many men were in your employ when he was there?

A. Well, we had two hired men besides Mr. Gagan and Mr. Berst, and we helped to work.

X Int. 44. You did not personally buy all the oil barrels that were bought, did you?

A. No; not myself. The company bought them together.

289 X Int. 45. You were not always in the refinery attending to the lining of barrels?

A. I was in the refinery every day, all the time, looking around.

X Int. 46. You mean that you were in the refinery all the time?

A. I was there pretty much all the time. I was not in the refinery always from morning to night.

X Int. 47. Did Mr. Gray buy all the barrels while he was there?

A. No, sir.

X Int. 48. What part did he buy?

A. He did not buy anything; he had no right to buy anything.

X Int. 49. He was working on a salary?

A. Yes.

X Int. 50. When did Mr. Gray first go with you?

A. I do not remember exactly the year.

X Int. 51. Are there any books in existence containing your business from 1861 to 1865?

A. I do not know where they are. I have not seen them since we quit.

Redirect:

R. D. Int. 52. You said on your cross-examination that you never saw any oil barrels that were lined with anything but melted glue. Did you mean by that the glue that you have always used and seen used was hard glue remelted?

A. Yes.

R. D. Int. 53. What was the capacity of your oil refinery per day?

A. About twenty barrels.

Recross:

R. X Int. 54. Do you remember how much you had to pay per pound from 1861 to 1865, during the war, for this glue you used?

Objected to for same reasons as stated above.

A. I do not remember.

R. X Int. 55. Do you remember anything about the quality of it?

290 A. It was always hard glue, same as glue now. They brought it in barrels up to the refinery.

R. X Int. 56. Did you personally examine all the barrels that you bought to see what they were lined with?

A. We bought new barrels and there was no lining in them. The second-hand barrels we always steamed out.

R. X Int. 57. Did you personally always examine all the second-hand barrels that were used at your refinery?

A. No, sir; I did not do that.

R. X Int. 58. You did a good deal of work besides gluing barrels, did you not?

A. I did not do a great deal of work. I did what was necessary.

CLEMENS VON BUSECK.

Sworn to before me this 28th day of April, 1888.

HENRY A. CLARK,
Special Examiner.

JOHN C. VON BUSECK, being sworn, testified as follows:

Int. 1. What is your name, age, residence, and occupation?

A. John C. Von Buseck; 45 years of age; Erie, Pa., is my residence, and I am a laborer.

Int. 2. Were you ever employed by the firm of D. Kennedy & Co., oil-refiners, in the city of Erie, Pa.; and, if so, when?

A. Yes, sir; I think I commenced there in the spring of 1864.

Int. 3. Are you related to Mr. Clemens Von Buseck, the last witness?

A. Yes, sir; I am a son of his.

Int. 4. What were your duties while so employed?

A. Filling stills and watching them and gluing oil barrels.

Int. 5. Did you always line your oil barrels with glue; and, if so, how did you line them?

291 A. Yes; we always lined our own oil barrels. We lined them with hard glue melted.

Int. 6. Did you ever buy any barrels that had previous to your purchasing them been lined with glue?

Objected to as leading.

A. No, sir.

Int. 7. Did you ever see any barrels enter in your own factory or anywhere else that had been lined previous to their being purchased?

A. No, sir.

Int. 8. I point out to you now as present Warren W. Green, of Richmond township, Crawford county, Pa., who has testified in this case for the defendant. Did you ever see him at your factory?

A. No, sir; I do not recollect that I did.

Int. 9. Did you ever buy any barrels of him?

A. I never had any right to buy barrels of anybody.

Int. 10. Where was the refinery of D. Kennedy & Co. located in Erie?

A. Located in Erie on what was called the old Waterford plank road, on State street, above the Morton house.

Int. 11. Did you ever hear of any firm of oil-refiners named Kennedy & Gagan?

A. No, sir.

Cross-examination:

X Int. 12. How do you fix the time when you first went to work in your father's refinery?

A I was back home that winter. I had not been at home for two years, and I went to work in the spring.

X Int. 13. Where had you been the two years previous?

A. Warren, Penn., clerking in a wholesale grocery house.

X Int. 14. Had you ever worked before in an oil refinery?

A. No, sir.

X Int. 15. Did Mr. Richard Gagan work at the Kennedy refinery while you were there?

A. No, sir.

292 X Int. 16. What did you used to do with the second-hand barrels that you used?

A. We steamed them out and cleaned them, and what were good for oil after being glued we used them for oil and the balance we used for refuse.

X Int. 17. Did you take the heads out of the barrels?

A. No, sir.

X Int. 18. What did you do with the new barrels?

A. Glued them with hard glue melted.

X Int. 19. Did you knock the heads out of any new barrels?

A. No, sir.

X Int. 19. Had the second-hand barrels you used been glued before?

A. Yes, sir.

X Int. 20. You do not know how they had been glued?

A. No, sir.

X Int. 21. How many barrels did they glue a week on an average at this refinery in 1864?

A. About 40 a week.

X Int. 22. What proportion of these were new barrels and what second-hand?

A. They were all new barrels. Very seldom we glued a second-hand barrel in those times.

X Int. 23. Why did you not glue the second-hand barrels?

A. After they were steamed out they had to lay and get dry awhile; after we would get about 25 or 30 we would glue them.

X Int. 24. If you had run the refinery to its full capacity how many barrels would you have glued in a week in 1864 and 1865?

A. About 60.

X Int. 25. You never saw anything of any other process of lining barrels than by the use of melted hard glue, did you?

A. No, sir.

X Int. 26. What kind of glue was this that you used at the refinery?

A. Brown in color; came in barrels or cake- and flakes.

X Int. 27. Have you ever been in Richmond township, Pa.?

A. No, sir.

X Int. 28. How long did you remain in the employ of this firm?

A. Till 1869.

293 X Int. 29. Your duties were what during that period?

A. Laboring at everything.

X Int. 30. Who worked with you at this refinery during this time?

A. George W. Gray worked there awhile.

X Int. 31. Anybody else?

A. A German. I do not remember his name; given name was John. He lived here in Erie. No others that I remember.

X Int. 32. Do you remember when Mr. Gray left?

A. No; I could not tell you.

X Int. 33. Can't you give the year?

A. We both left about the same time, in the fall of 1869.

X Int. 34. And Mr. Gray was there when you went there?

A. Yes; he was there when I came there, I think.

X Int. 35. Are you positive?

A. Yes.

X Int. 36. You have been present while your father has been giving his evidence, have you not?

A. Yes.

Redirect:

Int. 37. You first stated that you did not recollect exactly when Mr. Gray went away, and you subsequently stated that you thought he remained there as long as you did. Will you please give it more thought and tell us if you still think he was there as long as 1869?

Objected to as a plain attempt to induce the witness to change his answer.

A. No; he was not there as long. I know better now. It was a year less than what I stated before; that would be in 1868.

Int. 38. But you have no positive recollection as to the time, have you?

Same objection.

A. No, sir; I have not.

294 Int. 39. From whom did you get your second-hand oil barrels?

A. From retail grocers around town.

Int. 40. Were they from grocers to whom you had sold oil?

Objected to as leading.

A. Yes, sir.

Int. 41. What treatment did you always subject your second-hand barrels that you received from these grocers?

Objected to as leading and because the witness has several times stated how he treated the barrels; it is unnecessary for him now to change any answer that he may have made.

A. We cleaned them out, repainted, and reglued them.

Recross:

X Int. 42. You cannot tell the year in which Mr. Gray left the refinery, can you?

A. I think it was in 1868.

X Int. 43. Was it not in 1867?

Complainant's counsel objects on the ground that witness has already stated he cannot remember when Mr. Gray left.

Defendant's counsel objects to complainant's counsel putting words into the mouth of his witness.

Complainant's counsel objects to the remarks of the defendant's counsel, as he has put no words into the witness's mouth, but defendant's counsel seems desirous of obtaining a positive answer from the witness when he has already stated that he does not remember the date when Mr. Gray left.

295 A. I could not recall the time. These things happened so long ago and I never paid any attention to it.

J. C. VON BUSECK.

Sworn to before me this 28th day of April, 1888.

HENRY A. CLARK,
Special Examiner.

Adjourned to April 30th, A. D. 1888, for Monday, 11 o'clock a. m., at my office, 704 State St., Erie, Penn.

HENRY A. CLARK,
Special Examiner.

Pursuant to adjournment and notice parties met.

Present: Samuel C. Reed, Esq., of counsel for complainant, and William S. Beaman, Esq., of counsel for defendant.

D. LYMAN CLARK, being duly sworn, testifies as follows:

Int. 1. State your name, age, residence, and occupation.

A. D. Lyman Clark; 54 years old; residence, Richmond township, Crawford county, Penn., and I am engaged in farming now.

Int. 2. How long have you resided there?

A. Forty years.

Int. 3. Were you living there from 1861 to 1865?

A. Yes, sir.

Int. 4. Was there formerly a tannery in that place which was known as the John Brown tannery?

A. Yes, sir.

Int. 5. Was that John Brown the man who is so well known in history?

A. Yes, sir; he was Harper's Ferry Brown.

296 Int. 6. What relation were you to him?

A. A nephew.

Int. 7. Did you have a brother Almon Clark?

A. Yes, sir.

Int. 8. Was he at any time the proprietor of this tannery; and, if so, what year did he purchase it?

A. In 1854.

Int. 9. Did he afterwards sell it; and, if so, what year?

A. It was sold on a foreclosure of a mortgage; I do not recollect the exact date.

Int. 10. What year did he move away from Richmond?

A. In 1859 he moved away from Richmond.

Int. 11. Did he after that date have anything to do with the tannery?

Objected to as leading.

A. No, sir; he did not run the tannery after that date.

Int. 12. What was the year that the tannery ceased running?

A. It ceased running in 1860, the fore part.

Int. 13. Did your brother have anything to do with the running of the tannery after he moved away from Richmond?

Same objection.

A. No, sir.

Int. 14. State to the best of your recollection what year the tannery was sold under foreclosure.

A. I think, to the best of my recollection, that it was in 1864 or 1865; I won't be positive; I think so.

Int. 15. But from the time your brother moved away from Richmond in 1859 was the tannery run at all as a tannery?

Same objection.

297 A. It was not by my brother; my father had a little stock in it; his stock was got out in 1860.

Int 16. Did your father sell all the stock that was left in the tannery prior to 1861?

Same objection.

A. Yes, sir.

Cross-examination:

X Int. 17. Have you any other occupation than farming?

A. I used to be a shoemaker.

X Int. 18. How long were you a shoemaker?

A. I can't tell how long; I cannot answer that question.

X Int. 19. Do you work at all now at shoemaking?

A. No, sir; but very seldom; don't pretend to work at it.

X Int. 20. You never have called yourself a shoemaker?

A. I have not called myself a shoemaker; I used to work at it a good many years ago.

X Int. 21. When did you give up working at it?

A. I can't say positively, but it is a good many years.

X Int. 22. Can't you tell within a year when you gave it up?

A. No, sir; I could not tell you when I quit shoemaking; I cannot tell it with any degree of accuracy.

X Int. 23. Can you tell within five years?

A. Don't know that I could; am not certain that I could; I have told you what I know about that.

X Int. 24. How long have you been employed in farming?

A. I have farmed some ever since I was old enough to work.

X Int. 25. How long have you had your present farm, if you have one?

A. Well, it is six years.

X Int. 26. What part of Richmond did you live in before you moved to this farm?

A. I lived there on a farm east of there a mile.

298 X Int. 27. How long did you live there?

A. I don't recollect for certain.

X Int. 28. Give your best recollection.

A. I think I bought the farm in 1865; in the spring.

X Int. 29. Where did you live before going to the last-mentioned farm?

A. I lived at Lincolnville, Crawford county, before I went to this farm, two years.

X Int. 30. What were you doing at Linconville at this time?

A. I was farming part of the time; worked some in the woods cutting logs some.

X Int. 31. Anything else?

A. I was in Bradford, Pennsylvania, part of the time; a small part of the time.

X Int. 32. What were you doing in Bradford?

A. I was working in and about Bradford.

X Int. 33. Working at what?

A. I was putting up rigs or derricks part of the time, and a part of the time I was collecting.

X Int. 34. For whom were you putting up rigs or derricks?

A. I was hired as a hand. It was for an oil company; I do not know who.

X Int. 35. These derricks and rigs were put up in Bradford?

A. In Bradford oil region.

X Int. 36. For whom did you work collecting?

A. I can't tell you that now without my memorandum.

X Int. 37. Was it for some party in Bradford?

A. No, sir; they lived in some other place.

X Int. 38. Do you remember where they lived?

A. Some of them lived in New York State and some of them in Ohio, I think.

X Int. 39. Did you collect for more than one party?

A. No, sir; and just a short time at that. They were burned out; my clothes were all burned out.

X Int. 40. Where were they burned out?

A. At Red Rock, a little town near Bradford. There were

299 two fires; the one I am speaking of now is the last one.

X Int. 41. Where were your clothes when they were burned at this fire?

A. They were in a boarding-house in Red Rock.

X Int. 42. Do you remember who kept the boarding-house?

A. There was a man by the name of St. John who used to keep it. I do not know who kept it at this time.

X Int. 43. Where did your business of collecting for this Bradford party take you?

A. Into Bell's Camp; right in that vicinity.

X Int. 44. In what year did you go to Lincolnville?

Objected to on the ground that the witness has already stated when he went to Lincolnville.

A. That is an improper question. It was eight years ago this spring. You can make figures for yourself; I don't propose to.

X Int. 45. You don't propose to tell the year in which you went to Lincolnville, do you?

Objected to on ground that the witness has twice stated the year he went to Lincolnville.

A. It was the spring of 1880.

X Int. 46. I understood you to say some time ago that you had lived six years in your present house, and that prior to living there you had lived in a house a mile to the east of there, which you bought in the spring of 1865. I also understood you to say that prior to living in this place you had lived in Lincolnville. Was my understanding correct?

A. I moved from Lincolnville to where I live now, and I moved from that farm, which I bought in 1865, to Lincolnville.

300 X Int. 47. And what you did in Bradford and vicinity you did prior to buying this farm, which you say you bought in spring of 1865?

A. I never was in Bradford prior to 1865. I never was to Bradford till ten years ago. I never moved to Bradford. My residence was in Lincolnville and in Richmond.

X Int. 48. From whom did you buy this farm? You say you bought in 1865.

A. John Hodgkiss.

X Int. 49. When did you sell that farm?

A. The farm was sold in the winter of 1879 and '80.

X Int. 50. How long did you own that farm?

A. About 15 years.

X Int. 51. In what part of Richmond did you live prior to the time when you bought this farm, in 1865?

A. I lived east; about one and a half mile east of the tannery.

X Int. 52. How long had you lived at that place?

A. Well, somewhere from three to four years, to the best of my recollection.

X Int. 53. Can't you tell exactly how many years?

A. I could not tell exactly.

X Int. 54. Where did you reside prior to moving to this house, which was about one mile and a half east of the tannery.

A. I lived at the Corners—at Clark's Corners—in a little house. I do not think it was more than fifty rods from the tannery.

X Int. 55. How long had you lived there?

A. I went to keeping house there. It was the first housekeeping I did. I cannot tell exactly how long ago it was.

X Int. 56. What was your occupation while you lived at this house at Clark's Corners?

A. Shoemaking a part of the time and farming some.

X Int. 57. Did you own this place while you lived there?

A. I would not be positive whether my wife or I had the title to that little place.

X Int. 58. Was it sold by you or by your wife?

A. I would not be positive, but it was sold. I don't know whether it was I or my wife who sold it.

301 X Int. 59. Do you remember to whom it was sold?

A. It was sold to Mrs. Elizabeth Green, of Richmond.

X Int. 60. Does she now reside in Richmond?

A. I think she does.

X Int. 61. Don't you know she does?

A. I don't, because I have not seen her for some time.

X Int. 62. How long since you have seen her?

A. Can't recollect just how long; not positive.

X Int. 63. Have you seen her within a month?

A. No, sir; I have no recollection of seeing her within a month.

X Int. 64. Have you seen her this year?

A. I don't think I have; can't recollect distinctly.

X Int. 65. Have you seen her within six months?

—. I would not be positive that I had; not positive.

X Int. 66. Is she a married woman? Is her husband living?

A. I think she is a married woman. She is a married woman. Her husband is living; I think he is.

X Int. 67. How far do they live from your house?

A. I should say it was between two and three miles.

X Int. 68. Do you know her husband's name?

A. Yes, sir; it was W. W. Green or Willet Green, as we used to call him.

X Int. 69. Is he here present?

A. Yes, sir.

X Int. 70. Do you know how long he has lived in Richmond township?

A. No, sir.

X Int. 71. Give your best recollection.

A. Could not say positive.

X Int. 72. Did he live there in 1880?

A. I think he did.

X Int. 73. Did he live there in 1870?

A. I could not say positive.

X Int. 74. Did you see him between 1870 and 1880 at any place or places?

A. I think I did.

302 X Int 75. You would not swear that you did see him during those ten years?

A. I would not be positive, but I think I did.

X Int. 76. How many times did you see him during those ten years, to the best of your recollection?

A. Could not recollect, sir.

X Int. 77. Did you see him more than once?
A. I think so.
X Int. 78. Did he live where he lives now during that ten years?
A. Could not say positive; could not say as to that.
X Int. 79. Have you ever been in his house?
A. Yes, sir.
X Int. 80. Has he ever been in your house?
A. Yes, sir.
X Int. 81. When was he last in your house?
A. Don't recollect; not a great while since.
X Int. 82. How long since you were in his house?
A. I cannot recollect how long.
X Int. 83. How far is your house from his?
A. I think between two and three miles.
X Int. 84. Did Mr. Green live in Richmond between 1860 and 1870, if you know?
A. I think he did.
X Int. 85. Can you say positively whether he did or not?
A. Yes, sir; he did live there.
X Int. 86. Does Mr. Green at the present time carry on any business at Richmond, to your knowledge?
A. No, sir; not that I know of.
X Int. 87. Did he ever carry on any business there, to your knowledge?
A. Yes, sir.
X Int. 88. When?
A. I can't tell the date; saw-mill and lumbering trade.
X Int. 89. Where was his saw-mill?
A. On the farm where he lived.
X Int. 90. Where he lives at present?
A. Yes.
X Int. 91. Do you know when he commenced this saw-mill business?
A. No, sir; I do not.
303 X Int. 92. Can you tell within five years when he commenced it?
A. Don't recollect, sir; I cannot.
X Int. 93. Any other saw-mills in the place?
A. Don't know that there is any real handy.
X Int. 94. Have you ever had occasion to have any lumber sawed at Mr. Green's saw-mill?
A. I have not.
X Int. 95. Have you ever had occasion to have any lumber sawed by anybody?
A. Yes, sir.
X Int. 96. By whom?
A. Had lumber sawed by Mr. John T. Smith, of Athens, Crawford county, an adjoining town to Richmond.
X Int. 97. How long ago was that?
A. Could not tell, sir.
X Int. 98. Where were you living when you had it sawed by him?

A. A mile and a half east of where I now live.

X Int. 99. Was Mr. Green's mill in existence when you took this lumber to Smith's to be sawed?

A. I think not.

X Int. 100. What other saw-mills are there in Richmond township?

A. There is the mill of Morse & Co. or Morse & Terry in Richmond.

X Int. 101. Can you state how many people reside in Richmond township?

A. Cannot; could not tell.

X Int. 102. Have you any idea how many people live there?

A. No, sir.

X Int. 103. Have no idea at all?

A. There is about 400 voters.

X Int. 104. Has it increased in population from 1860 to 1865?

A. Could not say positively.

X Int. 105. What is your judgment on that?

A. I should think it had, but could not say.

X Int. 106. Do you know where Mr. Green lived before he lived in his present house?

A. Could not say where he moved from to that place; could not be positive.

304 X Int. 107. Have you any recollection at all as to where he moved from to his present place?

A. I have not.

X Int. 108. Do you remember any place where he lived before he lived in his present place?

A. Yes, sir; I remember one place. He lived on a place that his brother now owns, Dr. Green.

X Int. 109. Where is this place?

A. West of where I now live, about 3 to 3½ miles.

X Int. 110. What did he do there?

A. Farmed some.

X Int. 111. How long did he live there?

A. Don't know.

X Int. 112. Give your best recollection.

A. Could not give anything definite.

X Int. 113. Did he live there a year?

A. I could not say.

X Int. 114. Did he live there a month?

A. Could not say; suppose he did.

X Int. 115. How do you know he lived there at all?

A. I was at his house when he lived there.

X Int. 116. Where did you live when you were at his house?

A. Can't say; won't be positive where I did live just at that time.

X Int. 117. Where do you think you lived?

A. I lived in Richmond.

X Int. 118. What house did you live in?

A. I could not say.

X Int. 119. Do you mean to swear on your oath in this case that you don't know in what house you lived in Richmond township during any of the time that Warren Green lived in the house that his brother, Dr. Green, now lives in?

A. I will swear that I don't remember where I lived.

X Int. 120. While he, Mr. Green, was living in the house now occupied by his brother do you remember that he ever called on you or your family?

A. I do not recollect.

X Int. 121. You and he were both at that time married and had families?

A. Yes, sir.

305 X Int. 122. Your wives knew each other?

A. Yes, sir.

X Int. 123. Did they ever exchange calls upon each other during this time?

A. Could not say as to that; I would not be positive.

X Int. 124. Have you any recollection that they did?

A. I have not while they lived on the farm.

X Int. 125. Where did Mr. Green live before he lived on the farm to which you have referred in your last answer?

A. I would not be positive, but think he lived in Venango county, Pa.

X Int. 126. Did you ever see him and his family down there?

A. I did, sir; I saw him and his family and staid all night with them.

X Int. 127. What part of Venango county was that?

A. Below Oil City, down the river.

X Int. 128. Did he live in a village?

A. I think not.

X Int. 129. How long ago was that?

A. Could not say.

X Int. 130. Can you tell within five years?

A. I would not be positive about the time.

X Int. 131. Question repeated.

A. Cannot tell within five years without having a memorandum.

X Int. 132. What business called you to Venango Co. at that time when you stopped with Mr. Green?

A. I drove some stock down to Oil City.

X Int. 133. And sold the stock there?

A. Yes, sir.

X Int. 134. Why did you go below Oil City?

A. I saw Mr. Green in Oil City and he invited me down to see the folks, and I went down and staid with him.

X Int. 135. What was he doing there at the time?

A. I think Mr. Green had an interest in oil wells or oil business.

X Int. 136. Did you ever have any interest in oil business or oil interests?

306 Objected to, not being proper cross-examination.

A. I had some interests—some small interests at one time.

X Int. 137. How long did you retain or have any such interests?
A. A very short time; I can't say.
X Int. 138. Did you have more than one?
A. Not that produced.
X Int. 139. Where was that?

Same objection.

A. On Cherry run.
X Int. 140. How long did you keep that?
A. I don't know; probably two months.
X Int. 141. How long since you have had any interest of any kind in the oil business in any of its relations?

Same objection.

A. It must be nine or ten years.
X Int. 142. Did Mr. Green at any time, to your knowledge, have a cooper shop in Richmond?
A. He did.
X Int. 143. Where did you live at the time when he had such shop?
A. About one and a half miles east of where I do now.
X Int. 144. Did he have his cooper's shop there during the late rebellion of 1861–'65?
A. I think he did.
X Int. 145. How far from this cooper's shop was the house in which you then lived?
A. About a mile and a half, I think.
X Int. 146. How far from what you call the John Brown tannery was his cooper shop?
A. I should say it was between 40 and 50 rods, on the opposite side of the road.
307 X Int. 147. Is the building which was then used by Green as a cooper's shop still standing?
A. It has been moved; it is not in the same place.
X Int. 148. Where has it been moved to?
A. I think Mr. McFadden has it for a store or ware room.
X Int. 149. While Mr. Green was proprietor of this cooper shop what was your occupation?
A. Farming.
X Int. 150. Where did Mr. Green live while he was proprietor of this cooper shop?
A. I think he lived on the lot where the cooper shop was; I think he did.
X Int. 151. Have you any knowledge as to whether he owned the place on which he lived and the shop?
A. I think Mrs. Green, the wife, owned it, but I would not be positive.
X Int. 152. The place had been sold to her, had it not, to the best of your knowledge?
A. That is to the best of my recollection.
X Int. 153. Sold either by you or your wife, was it not?

A. Yes, sir.

X Int. 154. Was Mr. Green during any of the time while he was the proprietor of this cooper shop engaged in the oil business in any way?

A. Not to my recollection.

X Int. 155. He devoted himself to this coopering business during that time, did he?

A. As far as I know.

X Int. 156. You have no recollection as to his being interested in anything but coopering at this time?

A. I have not.

X Int. 157. Did he own any horses during that period or teams?

A. I don't know.

X Int. 158. Have you any recollection whatever about it?

A. No, sir.

X Int. 159. Did you ever see Mr. Green during that period of 1861 to '65 driving any teams?

A. I don't recollect that I did.

308 X Int. 160. Will you swear that you did not see him?

A. I will swear I don't recollect seeing him drive teams.

X Int. 161. Question repeated.

Objected to on the ground that the witness has stated that he will swear that he does not recollect ever having seen him.

A. I will swear that I did not.

X Int. 162. Do you remember the names of anybody who worked in Mr. Green's cooper shop at this time?

A. I think that Spafford Green worked there some; he was a brother of Mr. Green; he is now dead.

X Int. 163. Do you remember anybody named Williams who lived in Richmond about that time?

A. I think I do.

X Int. 164. Do you remember his full name?

A. There was one Williams lived there named Henry.

X Int. 165. Is that one alive now?

A. I can't say.

X Int. 166. How long since you have seen him?

A. I can't recollect how long.

X Int. 167. Give your best recollection?

A. I could not give anything definite. That is what I say.

X Int. 168. Was he a married man when you knew him?

A. He was a single man when I saw him; he might have been married since.

X Int. 169. Did he have a father, who lived in Richmond?

A. Yes, sir.

X Int. 170. Is he living?

A. I think not.

X Int. 171. Did this young Williams have any work or occupation while you knew him?

A. I think he did.

X Int. 172. Please state what it was.

A. I think he worked at coopering some.

X Int. 173. Did you ever know a man named Washington McClintock, of Petroleum Center?

A. I have seen him.

309 X Int. 174. What business was he engaged in?

A. Had a farm that had oil wells on.

X Int. 175. Do you know whether he is alive?

A. No, sir; I do not.

X Int. 176. How long since you have seen him?

A. It must be 16 or 17 years, to the best of my recollection.

X Int. 177. Have you ever heard that he was dead?

A. I don't recollect.

X Int. 178. Did you ever work in the John Brown tannery?

A. Yes, sir; some.

X Int. 179. When?

A. 1854 or 1855.

X Int. 180. Who was then the proprietor?

A. My brother, Almon Clark.

X Int. 181. Was it then called the John Brown tannery?

A. It has always been called that, to my knowledge and so far as I know.

X Int. 182. Was your mother a sister of John Brown?

A. She was a sister of John Brown's wife.

X Int. 183. Who had the mortgage on this tannery, and how much was it?

A. Mr. Gill or Shryock, of Meadville, one or the other, and the mortgage was somewhere near $200.00.

X Int. 184. Have you ever seen that mortgage?

A. No, sir.

X Int. 185. Did you ever have any interest in the tannery?

A. I had a small interest in the tannery at one time.

X Int. 186. How did you acquire it?

A. I bought a small interest of my brother.

X Int. 187. When was that?

A. I think it was about 1857.

X Int. 188. You were not one of the mortgagees of the property?

—. ——.

X Int. 189. How long did you have your interests?

A. About three months.

X Int. 190. To whom did you dispose of it?

A. To my brother Almon.

310 X Int. 191. For how much?

A. I think the consideration was about $50.00.

X Int. 192. What part of the ownership did you sell?

A. We called it a one-fourth.

X Int. 193. How long had this tannery been there, to your own knowledge, at the time when it was sold under foreclosure?

A. It was built about 1834 or 1835 by John Brown.

X Int. 194. How long had it been worked as a tannery?

A. I could not say positively about that.

X Int. 195. Whom did your brother buy it of?

A. My father; he kept a tannery there.

X Int. 196. When did your father die?

A. He died in 1881.

X Int. 197. Do you know who bought the property on the foreclosure sale?

A. The mortgagees.

X Int. 198. Is the tannery still carried on there?

A. No, sir.

X Int. 199. How long since has there been any tanning done there?

A. There has been no tanning done there since 1859 or the early part of 1860.

X Int. 200. Has any kind of business been carried on there since then, to your knowledge?

A. Yes, sir; there has been a cheese factory; then there has been a feed-mill since the cheese factory; nothing else that I know of.

X Int. 201. When was the cheese factory there and how long?

A. Could not state just when, but think it was probably twelve or thirteen years ago.

X Int. 202. How long was the cheese factory there?

A. Could not recollect.

X Int. 203. Of what buildings was the tannery composed when it was sold under the foreclosure?

A. One building; lower story of stone, the upper of wood; about fifty feet long and twenty-six feet wide, I think it is.

X Int. 204. How many men were employed there at a time by your brother when he run it?

A. He never employed but one besides himself.

311 X Int. 205. Was there any business carried on there after the foreclosure sale and before the cheese factory was established there?

A. No, sir.

X Int. 206. When did your brother Almon die?

A. I think he died in 1878.

X Int. 207. How long did your brother Almon live in Richmond after the foreclosure sale?

A. My brother Almon was not living in Richmond at the time of the foreclosure and did not live there afterwards. He left in 1859; he did not live there after 1859.

X Int. 208. Are you positive as to the exact year in which the foreclosure occurred?

A. No, sir; I could not recollect the year.

X Int. 209. Where did your father live in 1860 to 1865?

A. In the house where I now live. It is some sixty rods from the tannery.

X Int. 210. What business did he carry on at that time?

A. He had two mail contracts at that time—one from Meadville to Spartansburg and the other from Meadville to Tryonville. Part of the time he was on the road himself.

X Int. 211. Did he also carry on the farm on which you now live?

A. Yes, sir.

X Int. 212. Where did you live during that period?

A. I lived one and a half miles east from that place from 1861 to 1865.

X Int. 213. Did you have occasion during this period to visit the tannery?

A. I did.

X Int. 214. For what?

A. I used to go down and help father, and every time I went down, nearly, I went over to the tannery.

X Int. 215. Was there anybody living there in the tannery then?

A. No, sir.

X Int. 216. Has there anybody lived there since?

A. Yes; Mr. Richardson lives there now.

X Int. 217. For what purpose did you use to go to the tannery at this time?

312 A. Father used to keep a few nice sheep in the tannery, and we used to go in there to see them; they were pets; we used to give them salt to eat.

X Int. 218. On your way from your house to your father's did you pass Mr. Green's cooper shop?

A. No, sir.

X Int. 219. That was beyond your father's house and on the other side of the road?

—. ——.

X Int. 220. Did you used to go over to Mr. Green's shop on any of these occasions?

A. I have stopped in Mr. Green's cooper shop passing along a good many times.

X Int. 221. Where was he living at that time?

A. Green lived on the lot where the cooper shop was.

X Int. 222. Had you any other reason for going into the tannery except to see these pet sheep?

A. Yes, sir.

X Int. 223. What other reason?

A. We kept some of our farming tools up in the garret and I used to go up in there after them.

X Int. 224. As I understand from your description, the building consisted of two large rooms on each of the first and second floors, and above was the attic?

A. That was so.

X Int. 225. How much space about the tannery was devoted to the purposes of the tannery while your brother was occupying it as a tannery?

A. Ten vats outside the tannery, eight vats on the inside of the tannery.

X Int. 226. How much space did these ten outside vats occupy?

A. Each vat was probably about three feet wide and six feet long.

X Int. 227. How much land belonged to the tannery?

A. I could not tell you; I do not know.

X Int. 228. How much, in your best judgment?

A. There might have been a half or three-quarters of an acre.

X Int. 229. You remember what kind of a cooper shop Green had?

313 A. It was a rough board building; do not know the size; cannot give any idea of the size. It was not as big as the tannery and it was one story. It was right on the road and the house was a little ways north of it.

X Int. 230. Are you sure that the cooper's shop was not between your father's house and the tannery?

A. It was between my father's house and the tannery, on the opposite side of the street.

X Int. 231. Who first spoke to you about being a witness in this case?

A. I don't recollect. I am not positive about that. I did not know I was to be a witness. It is a new thing. I saw Mr. Reed, counsel for complainant, last Friday. He was at Richmond.

X Int. 232. Was that the first interview that was had with you about this matter of the old tannery?

A. Yes, sir; that was the interview where I knew I was to be subpœnaed to be a witness in the case.

X Int. 234. Have you been subpœnaed to testify here?

A. No, sir; I was simply asked to come by Mr. Reed and I said I would.

X Int. 235. Before you talked with Mr. Reed had you talked with anybody else about the old tannery?

A. Nobody during the present year.

X Int. 236. When did you leave home?

A. Last night.

D. LYMAN CLARK.

Sworn to before me this 30th day of April, 1888.

HENRY A. CLARK,
Special Examiner.

UNITED STATES OF AMERICA, }
Western District of Pennsylvania. }

314 I, Henry A. Clark, a special examiner appointed by the circuit court of the United States of America in and for the southern district of New York *pro hac vice* to take proofs for final hearing in the cause in the caption named on the part of the complainant, do hereby certify that the foregoing are proofs so taken; that on the days named in the foregoing evidence there attended before me, in the city of Erie, in the said western district of Pennsylvania, the counsel for the respective parties in said cause and the witnesses, viz., George W. Gray, Clemens Von Buseck, John C. Von Buseck, and D. Lyman Clark; that said witnesses, being of sound mind and lawful age, were by me first duly cautioned and sworn to testify the truth, the whole truth, and nothing but the truth in said cause and were then carefully examined, and the said witnesses did thereupon depose as appears in the foregoing deposi-

tions, which depositions were reduced to writing in the presence of the said witnesses, and when completed were read over to the said witnesses and signed by them as and for their depositions in my presence. I further certify that I am not attorney nor a counsel for either of the parties in said cause nor in any way interested in the event thereof.

I further certify that in the taking of said evidence I have complied in all respects with the requirements of the 67th rule in equity, as amended, by the Supreme Court of the United States, and I herewith transmit said evidence under my seal to the clerk of the court in which said cause is pending.

In testimony whereof I have hereunto set my hand and seal this 10th day of May, A. D. 1888.

[SEAL.] HENRY A. CLARK,
Notary Public.

315 United States Circuit Court, Southern District of New York.

EDWARD W. LEGGETT
vs.
THE STANDARD OIL COMPANY.

Please take notice that under the 67th rule in equity, as amended, I shall proceed to examine witnesses herein on behalf of complainant, before Henry A. Clark, Esq., specially appointed examiner herein, at his office, in the city of Erie, State of Pennsylvania, on the 28th day of April instant, at nine o'clock a. m. of that day, and on Monday, April 30th instant, at 2 o'clock p. m. of that day, at Little Cooley, Crawford county, Pennsylvania, at the residence of Mrs. Ira Clark, and you are invited to be present and cross-examine.

Dated April 26th, 1888.

EDWIN M. FELT,
Solicitor for Complainant.

Names of witnesses:
George W. Gray, Erie, Pa.
Clemens Von Buseck, Erie, Pa.
John Von Buseck, Erie, Pa.
Mrs. Ira Clark, Little Cooley, Pa.

316 COMPLAINANT'S EXHIBIT LEGGETT REISSUE. J. A. S., Ex. Sept. 14th, 1887.

UNITED STATES PATENT OFFICE.

EDWARD W. LEGGETT, of New York, N. Y.

Improvement in Lining Oil-Barrels with Glue.

Specification forming part of Letters Patent No. 143,770, dated October 21, 1873; Reissue No. 5785, dated March 10, 1874; application filed January 24, 1874.

To all whom it may concern:

Be it known that I, Edward W. Leggett, of the city, county, and State of New York, have invented an improved mode of coating or lining the inside of barrels, casks, &c., for the purpose of rendering the same impervious to hydrocarbon oil, or any equivalent material, and thereby improving the barrels, &c., for the purpose designed, of which the following is a specification:

This invention relates to the mode employed for that of coating or lining the inside of barrels, casks, &c., and thereby improving the same, for the above-mentioned purpose; and consists in preparing, from any glutinous substance, glue soup, said soup being permitted to attain but a certain consistency, and then applied directly as a coating or sizing.

In carrying out my invention I proceed as follows: Take any of the materials from which glue may be made, and proceed in the usual or any suitable manner for the manufacture of glue, until the soup has attained a certain consistency.

This consistency must be considerably less than that which is required whereby semi-fluid, solid, or cake glue is to be produced, and while it is in this half-finished state, so to speak, it is applied directly to the inside of the barrel or cask, where, after due evaporation, it will be found that said cask or barrel is lined thoroughly and completely with the material, inasmuch as a pressure of steam generated by heat applied is sufficient to force the thin glutinous fluid or soup well into the pores, fibers, and recesses of the wood, thus insuring a perfect lining.

I am aware that barrels, &c., have been lined or coated with glue of commerce, when said glue has been subjected to a process of reduction by dilution from its original consistency to a sufficiently liquid state; but I am not aware of any process wherein the glutinous material has been permitted to attain only its proper consistency for the purpose specified, and then applied directly, thus saving the time, labor, and expense heretofore employed by continuing the manufacture of the gelatinous soup until it has attained a glutinous condition, thus necessitating a reduction by diluting and reheating before it is fit for application, as set forth in this specification, traveling over, as it were, the same ground backward

and forward two or three times, whereas, by my process, this trouble is entirely dispensed with, by operating as within described.

This invention has nothing to do with the ordinary glue-lined barrel, but relates to a new and inexpensive mode or process of making barrels, casks, &c., better adapted to the purpose designed, by coating or sizing, as set forth, than by the ordinary means.

Heretofore glue has been taken in its completed state as an article of manufacture, reheated, diluted, and then applied; but such a process necessarily carries with it all the expense of preparing the glue at first as an article of trade or commerce.

My process contemplates taking the said soup when at a proper consistency and applying it to the inside of the package, permitting it to harden for the first time upon that surface.

The distinguishing feature of this improvement may be found, on examination, to be the superior integrity of the lining by the use of soup glue. By its peculiar character it is more freely absorbed by the wood, penetrating into fiber deeper than by the ordinary mode. Hence the sizing or coating is not only upon the surface, but penetrates into the wood, thereby presenting a thicker covering to the action of the oil, and this sizing is not liable to be broken off or cracked in handling the cask, as part of the coating is absorbed into the fiber and cells of the wood, which gives additional strength to it.

What I claim as my invention, and desire to secure by letters patent, is—

1. The within-described process of coating or lining the inside of barrels, casks, &c., wherein the glutinous material, instead of being produced by reduction from a previously solid state, is permitted to attain only a certain liquid consistency, and is then applied to the package and permitted to harden thereon for the first time, substantially as herein set forth and described.

2. A barrel, cask, &c., coated or sized by the material, and by the mode or process, whereby it is absorbed into and strengthened by the wood fiber, substantially as herein described.

EDWARD W. LEGGETT.

Witnesses:
C. W. REED.
A. F. CORNELL.

317 United States Circuit Court, Southern District of New York.

EDWARD W. LEGGETT
ag'st
STANDARD OIL COMPANY.

Testimony in behalf of the defendant taken in accordance with the 67th rule in equity, as amended, before Edward M. Guthrie, Esq., at Titusville, Pennsylvania, on the second day of November, A. D. 1887, pursuant to notice.

Attendances: Edwin M. Felt, for the complainant, and William S. Beaman, for the defendant.

RANSOM H. SARGENT, being duly sworn as a witness for the defendant, deposes and says:

Q. 1. What is your name, age, occupation, and residence?

A. Ransom H. Sargent; my age is fifty-four years; occupation, oil business; my residence is at Titusville, Pa.

Q. 2. How long have you been connected with the oil business?

A. Since 1861.

Q. 3. Where were you engaged in that business in 1861?

A. In Conneautville, Crawford county, Penn.

Q. 4. Please state when in that year you commenced business at Conneautville, and whether you were in partnership with any one; and, if so, with whom.

318 A. I was in partnership with William L. Robinson and David D. Williams, of the firm of Robinson & Williams, of Conneautville. They were an old firm of merchants there. My connection with them in the oil business commenced in October, 1861.

Q. 5. Are those parties now alive?

A. Mr. William L. Robinson is alive and still does business at Conneautville. Mr. Williams is dead.

Q. 6. Prior to 1861 had you resided in Conneautville; and, if so, how long?

A. I went to Conneautville in 1856 and remained there until 1864.

Q. 7. State whether, prior to 1861, you held any official position at Conneautville.

A. I was postmaster there from 1857 to 1861, during Buchanan's administration.

Q. 8. Describe the oil business in which you were engaged at Conneautville in 1861 and as long as you were in that business at said place.

A. I was in the refining business. We built a refinery in the southern part of the town, near the canal, which was then in operation. The building was a frame building. There were two or three buildings. We had a tank-house and a roofed building over our stills, a treating-house, and a barrel-house.

Q. 9. Do you remember when you commenced refining at this place?

A. We commenced in October, 1861.

Q. 10. How long did you continue in the refining business at that place?

A. Until the spring of 1864.

Q. 11. What happened in the spring of 1864?

A. Some time during the winter of 1863 and 1864 the people objected to the refining as a nuisance on account of its smell and smoke, and we were proceeded against in court as a nuisance. We then discontinued the refining business at that place and went to

319 Petroleum Centre. There I got the refusal of a refinery from Pickett & Sherman and laid it before my partners at Conneaut-

ville, and we concluded to purchase and move our work there, and we did so move in the spring of 1864.

Q. 12. How did you ship the refined oil from Conneautville?

A. We shipped in barrels by canal and later by railroad and by wagons to our customers in the immediate vicinity.

Q. 13. How did you obtain the barrels?

A. We bought them from different barrel-makers throughout that country.

Q. 14. Were the barrels used at your refinery lined or coated in any way on the inside? And, if so, state in what way they were so lined or coated and by whom. Describe the whole process.

A. They were lined with glue by us at the refinery. I don't know but that at first we used the hard glue and melted it. I don't know as we did; can't say. Pretty soon after we commenced operating we made our own glue from scraps that we bought at a tannery near by. The tannery was owned by Daniel Hammon. The scraps consisted of dried pieces of hides, odds and ends of hides and hoofs. The tannery was perhaps 200 feet distant from the refinery across the canal. We cooked the scraps in different ways. At first I myself took a large caldron kettle and filled it with scraps and water and built a fire under the kettle and boiled the scraps until we extracted the glue from them and boiled it down to a suitable consistency, and, while hot, we put it into the barrels and bunged them up and shook the barrels over and over, end over end, and swashed this glue inside while hot, so that it came in contact with all parts of the barrel. The pressure of this hot glue in the barrel would show us any leaks in the barrel, and when we discovered any pin-holes or worm-holes we plugged them up, and kept at it until the barrel was tight. If one coating did not answer we put in the second. When we
320 got through shaking the barrel with the glue in we had a trough we run them in with the bung-hole down and plug out to drain and dry. When dry we filled them with oil.

Q. 15. What was the quality of this lining when completed?

A. It lined the barrel satisfactorily.

Q. 16. Do you remember the names of any of the men who worked at your refinery while you used this process?

A. John Eldridge worked for us a good deal of the time. He still resides in Conneautville.

Q. 17. Is Mr. Hammon, the tanner, still living at Conneautville?

A. No.

Q. 18. Is the tannery still carried on at the same place at which it was when you purchased these scraps to which you have referred?

A. Yes.

Q. 19. Do you remember how long you used the process of lining oil barrels, which you have described in your answer to the fourteenth interrogatory?

A. Almost entirely while we did business there.

Q. 20. That is, you bought these scraps from Hammon's tannery and followed the process you have described in lining the barrels?

A. Yes.

Q. 21. Did you get any scraps from any one but Hammon?

A. I can't say positively, but I know that we made an effort to get some of other parties, as he did not have enough.

Q. 22. What part of the business did you generally attend to?

A. I had the management of the business and did a great part of the practical work at the refinery. I treated the oil, and was always there while running.

Q. 23. Did you personally purchase scraps of Hammon during this time?

A. Yes; and also of his men.

321 Q. 24. Did you personally boil those scraps as described?

A. I did.

Q. 25. Did you personally pour the hot liquid made from those scraps into the barrels and line the barrels, as you have described?

A. I did.

Q. 26. What did you use to call this liquid?

A. Glue lining.

Q. 27. Did Mr. Eldridge, whom you have named, do any of this work?

A. We used to work together, and after he got so he could get the right consistency himself he made a good deal of it.

Q. 28. How did you determine the right consistency and when to take it out of the kettle and pour it into the barrels?

A. That was a matter of experience. We used to pour it out while it was hot.

Q. 29. How did you experiment to get the knowledge as to the right consistency of the liquid in the kettle?

A. We would pour it into the barrels hot from the kettle. We took the head out of several barrels that was lined with the different consistencies, to see the thickness of the lining or coating on the inside of the barrel. When it was too thick it wouldn't spread over the inner surface of the barrel, and when too thin it wouldn't form a perceptible coating or lining, but when the right consistency it formed a complete lining of the inner surface of the barrel.

Q. 30. Do you remember what you found to be the right consistency?

A. When it was thin enough to spread evenly and not so thick as to not dry.

Q. 31. When you found that the consistency was too thick what did you do?

A. Added water and reheated it.

Q. 32. What did you do when you found that the consistency was not thick enough?

322 A. Boiled it down.

Q. 33. Did you personally keep any books of account of the business carried on at this refinery?

A. We had books. I kept a personal account, and I personally made entries in those books. Mr. Robinson, my partner, also made entries in those books.

Q. 34. Please look at the book I now show you and state what it is.

A. It is the account book of our refinery at Conneautville, from

the time we commenced business in 1861 until we ended in 1864; but the first fifty-two pages in this book are made up of entries which have nothing to with our refining business, and they were made in 1857.

Q. 35. In whose handwriting are the entries in this book which follow the first fifty-two pages?

A. They are in the handwriting of myself and Mr. W. L. Robinson, of Conneautville.

Q. 36. In whose handwriting are the entries on page- five and six of this book?

A. They are in mine.

Q. 37. In whose handwriting are the entries on pages 65, 66, 67, and 68?

A. In mine.

Q. 38. Were the entries in this book that were made by you made in the regular course of business and at the time stated in the entries?

A. They were.

Q. 39. Did you at the time those entries were made by you have knowledge of the facts?

A. I did.

Q. 40. Were the entries made by you true and correct when made?

A. They were.

Defendant's counsel offers in evidence the book shown the witness so far as it contains entries made by the witness, which entries the counsel now requests the witness to designate.

Complainant's counsel objects to the admission of the book
323 or any of the entries therein contained as incompetent, irrelevant, and will move at the final hearing to strike the same from the record.

A. In compliance with your request, I designate the entries in this book on the following pages as having been made by me, to wit: On pages 3, 3½, 5, 5½, 6½, 8 (Stephen Loring account); 9 (Joseph Larimer account); 10, 11, 12, 13, 14, 18, 20 (C. & S. Rushmore account); 19 (A. H. & J. Frey account); 21, 24, 25 (Byron Sargent account); 26 (O. B. Barber account); 32 (A. P. Foster); 33 (T. S. Cowels account); 46 (F. J. Klumph account); 45 (J. H. Dillingham and C. Griswold accounts); 56 (O. B. Slayter and Dan. Hammon accounts); 65, 66, 67, 68 (R. H. Sargent account); 78 (R. H. Sargent first 12 lines), 109, 110, 113.

(The book shown the witness is marked for identification "Exhibit Sargent & Co. Refinery Book.")

Q. 41. Are you able to state how much oil was refined at this Conneautville refinery by your company?

A. Only approximately. Our capacity was 25 barrels per day.

Q. 42. How near your capacity did you run?

A. We run full capacity during the fall and winter, although I

can't say we run full capacity at first. A good deal of the time the works were not running.

Q. 43. Can you tell how many barrels of oil were refined in all?

A. I cannot.

Q. 44. I call your attention to certain entries on page five of the book which has been shown you, the entries being in your handwriting and as follows, to wit: "Jan. 24, 1863, Hammon, for scraps, 60c.;" "Feb'y 9, 1863, Hammon, for scraps, 45c.;" "March 4, 1863, Hammon, for scraps, 45c.;" also to an entry in said book on
324 page 65, "Aug. 19, 1863, D. Hammon, for scraps, 78c." State whether or not those items represent actual payments made by you at the time stated and in the amount stated.

A. They do.

Q. 45. Who was the Hammon mentioned in those items? Is he the Daniel Hammon who kept the tannery in Conneautville in 1863?

A. He is.

Q. 46. How long since you have seen said Daniel Hammon?

A. Not for twenty years or more.

Q. 47. When did you last see this book which I have shown you?

A. About the last of August, 1887; and I saw it at Conneautville, at W. L. Robinson's store. Until then I don't think I had seen the book since 1864, when I left Conneautville.

Q. 48. Did you continue to make liquid glue out of scraps during all the time that you were interested in this refinery at Conneautville?

A. We used the hard glue at first for a short time. I think with that exception we used the liquid glue. We had some trouble in getting scraps. We may have used some hard glue afterwards, but don't think we did.

Q. 49. What was your interest in this Conneautville refinery?

A. I owned one-half. Robinson & Williams had the other half.

Q. 50. How long has Williams been dead?

A. About three months.

Q. 51. How long since you have seen him?

A. We elected him to the legislature in 1873, and I haven't seen him since.

Cross-examined by Mr. FELT:

X Q. 1. What is your business at present?

A. A little of the oil business and a little of the newspaper business.

X Q. 2. What part of the oil business?

325 A. Producing has been my business for twenty years. In connection with that I have been working on a newspaper for the past year.

X Q. 3. Where do you carry on your business?

A. My newspaper business is here; my oil business at Pithole creek, and incidentally here in Titusville.

X Q. 4. Have you a place of business here in Titusville? If so, where?

A. I don't know that I have any place. My headquarters is at the Citizen office at present.

X Q. 5. Do you do any business with the Standard Oil Company?

A. Not any.

X Q. 6. Have you since you left Conneautville or while there?

A. No.

X Q. 7. These scraps which you state you purchased from Hammon, what treatment, if any, did you subject them to before you put them into the kettle or caldron?

A. I can't say positively what treatment, if any, we subjected them to. My judgment is that we didn't treat them, but put them into the kettle.

X Q. 8. Then you put them in with the hair on the pieces of hide?

A. My recollection is that we put them in just as we got them from the tannery into this kettle.

X Q. 9. And when you got them from the tannery they had the hair on, had they?

A. Some of them had—some parts—and others hadn't.

X Q. 10. What was the capacity of the kettle?

A. It was a large—what we call a caldron kettle. I couldn't tell the capacity. I should judge it would hold about two barrels of water.

X Q. 11. What did you put into the caldron or kettle with the scraps?

A. For common we used water; but we may have experimented with a white substance, not lime, but that is not clear to me.

326 X Q. 12. Then you have no recollection of putting in anything but water?

A. We experimented with something; can't think of the name. We experimented once or twice with plaster of Paris. We stirred in some plaster Paris.

X Q. 13. What proportion of water with scraps did you put into the caldron?

A. We covered the scraps with water and if it was too thick we added more water and kept boiling it until we got the right consistency. We always kept the scraps under water.

X Q. 14. How did you apply your heat under the caldron?

A. By fire. We sometimes put the scraps in a vessel and put that vessel in the water in the kettle. That was our first operation. Afterwards we had a boiler made to fit the stove. We had a large stove. We boiled the scraps down in that.

X Q. 15. Then do I understand that the heat which you applied to the caldron or kettle you obtained from setting it on the stove?

A. When we made it in the caldron we built a fire around it. When we used the kettle we set it on the stove.

X Q. 16. How long on an average did you keep it on the fire?

A. I can't tell. It depended upon the heap. Perhaps a day.

X Q. 17. State as near as you can the temperature of the glue when you poured it into the barrel.

A. We intended to have it boiling hot.

X Q. 18. And how thick was it?

A. It was thicker than water, but not as thick as soft soap, but thick enough to run nicely.

X Q. 19. Would you say that it was of the consistency of jelly?

A. It was when hot like syrup, but when cold like jelly.

327 X Q. 20. Was it of such a consistency that when allowed to become thoroughly cold it was hard?

A. That was our intention.

X Q. 21. How hard?

A. When spread inside the barrel it was not hard enough to be brittle, but was tenacious.

X Q. 22. Had you ever had any experience in the manufacture of glue?

A. No, sir.

X Q. 23. Had you ever seen any glue made?

A. Yes; I had.

X Q. 24. What part of the manufacture had you seen?

A. I can't designate any part. I have never taken any notice.

X Q. 25. Who besides Eldridge was working with you at that time?

A. We had other parties who worked for us for a short time. Eldridge worked for us longer than any of the others.

X Q. 26. You say you boiled those scraps sometimes for a day. How much shorter time do you recollect having boiled those scraps before you deemed it sufficiently boiled?

A. Sometimes we soaked the scraps over night and sometimes we had a slow fire. When we were in a hurry for the glue we cooked them faster. I can't recollect the shortest time.

X Q. 27. Mr. Sargent, when did you first know that you were to be a witness in this case?

A. I was requested to go to New York the last of August, 1887, and I was examined there in regard to the process of gluing barrels. After that I was informed that I would probably be a witness in the case.

X Q. 28. Have you read the U. S. patent on which this suit was based?

A. No, sir.

X Q. 29. Were you informed what any witness in this case had already testified to?

A. No, sir.

328 X Q. 30. Where is Hammon, the tanner?

A. I think he is somewhere in Illinois.

Redirect by Mr. BEAMAN:

R. D. Q. 1. You boiled the scraps until the liquid in the kettle was of the right consistency, whether it was a long or short time?

A. Yes; that depended upon the intensity of the heat.

R. D. Q. 2. Might it not also depend upon the quality or quantity of the scraps?

A. Yes; we wanted to get at a certain result.

R. D. Q. 3. You obtained that result many times, did you not?

A. Yes.

R. D. Q. 4. And without putting anything into the kettle but water and scraps?

A. That is my recollection; commonly we used nothing but water.

R. D. Q. 5. When the solution in the kettle became cold in the kettle, if you ever allowed it to become cold, what was its consistency?

A. All the way from jell- to a hard substance, according to the conditions under which it had been boiled and simmered down.

R. D. Q. 6. How did you first come to use those scraps for making liquid glue as you have described?

A. The first intimation I had was from Daniel Hammon, the tanner. He asked why I didn't buy his scraps and make our own glue. I told him I hadn't thought of it. He said it would be a good deal cheaper and just as good if not better, and that we could convert the scraps into glue as well as we could the hard glue.

R. D. Q. 8. Are you a native of this county?

A. I am; was born near Conneautville.

R. H. SARGENT.

329 United States Circuit Court, Southern District of New York.

EDWARD W. LEGGETT
vs.
STANDARD OIL COMPANY.

Testimony in the above-entitled cause on behalf of the defendant, at Conneautville, Pennsylvania, before Frank Mantor, Esquire, special examiner appointed therefor.

NOVEMBER 3D, 1887.

Present: Edwin M. Felt, for complainant, and William S. Beaman, for the defendant.

WILLIAM L. ROBINSON, being duly sworn, deposes and says:

Q. What is your name, age, residence, and occupation?

A. William L. Robinson; age, 61; residence, Conneautville; occupation, merchant.

Q. How long have you resided and done business in Conneautville?

A. I have lived here forty years, and have been in business here all that time continuously.

Q. Were you ever interested in the oil-refining business here; if so, when and with whom?

A. Yes, sir; about 1861 I went into company with Ransom H.

Sargent and built a refinery here; it was in the southern part of the town.

Q. How long, if you remember, did you continue said business?

330 A. I think about two years here. We then moved the refinery to Petroleum Centre, Venango county, Pa., on Oil creek.

Q. Did you refine oil at the refinery here?

A. Yes, sir.

Q. What part of the business did you attend to here?

A. I attended to buying the crude and selling the refined.

Q. Do you remember whether or not you lined or coated oil barrels in any way at your refinery here? If so, state how they were so lined.

A. We boiled up scraps of leather from the tannery and made a glue, which we poured into the empty barrels while hot, and after shaking it round in the barrels turned out what remained, gluing the barrels inside.

Q. Where was the tannery that you speak of?

A. The scraps were bought of a tannery owned by Mr. Hammon near the refinery, not far off; his name was Daniel Hammon. He does not live here now. I don't think he has lived here for, perhaps, twenty years.

Q. What were these scraps of leather?

A. Scraps of hides rather than leather.

Q. How did you boil the scraps?

A. I didn't do it, but the men did who worked for us. They put them into a kettle and put it on the fire and boiled them.

Q. How long did they boil the scraps?

A. I couldn't tell you; until they formed glue.

Q. Did they take the liquid out of the kettle and pour it into the barrels?

A. Yes, sir.

Q. Was the liquid hot or cold when taken from the kettle?

A. Hot.

Q. Do you remember the consistency of the liquid when it was taken from the kettle?

A. I couldn't describe it except as hot glue.

331 Q. After pouring this hot liquid into the barrels did you bung up the barrels?

A. I think we put in the bung temporarily, so as to shake the barrel around.

Q. Do you remember where the scraps were boiled—in what part of the refinery?

A. I think in front of the arch where the fire was built under the still.

Q. How long did you continue this process of lining your oil barrels?

A. All the while that we were in business here at this place.

Q. From whom did you purchase scraps—from anybody besides Hammon?

A. Not that I remember.
Q. How often could you get scraps from Hammon?
A. I don't recollect.
Q. Did Hammon get any oil from your refinery?
A. I don't recollect.
Q. Do you know a man named John Eldridge here in Conneautville?
A. Yes; he used to work for us at the refinery here.
Q. Did he work at lining the oil barrels at your refinery here?
A. I think he did. He was working round the refinery.
Q. What was your share or interest in said refining business here?
A. We were in partnership with Sargent. We had equal interests with him.
Q. You personally didn't do any manual work at this refinery?
A. Not for any length of time; occasionally I would take hold and do something.
Q. During the time you were in this refinery were you carrying on any other business here?
A. Yes, sir; my store. I visited the refinery nearly every day.
332 Q. Please look at the book now shown you, which has been marked for identification "Exhibit Sargent & Co.'s Refinery Book," and state what it is.
A. This book is the account book that was used by us during our oil-refining business here. Tho book had previously been opened for some other account. The refinery account commences after the first fifty-two pages. The entries in this refinery book are in my handwriting and in those of Mr. R. H. Sargent. The entries made by me were made in the regular course of business. They represent actual transactions. I knew the facts at the time I made the entries. The entries made by me were true and correct.

The book shown the witness is offered in evidence by counsel for defendant. The same is objected to by counsel for complainant as incompetent, inadmissible, and irrelevant.

Q. What part of the business did Mr. R. H. Sargent attend to?
A. He attended to refining the oil and gluing the oil barrels and filling them with oil.

Cross-examined:

Q. Your time was principally taken up, was it not, with your other business?
A. Yes, sir.
Q. And your recollection of what occurred there is more general than otherwise, is it not?
A. Yes, sir; although particular things I recollect very distinctly.
Q. Do you know how long they used to boil the scraps?
A. I do not know the exact length of time.

Q. Do you recollect seeing any of this glue after it had become cold?

A. Yes, sir; in pouring it into the barrels it would scatter around sometimes on the outside of the barrel.

333 Q. What was its condition then?

A. It looked like a glue.

Q. Was it hard or soft when it was cold?

A. It was usually hard.

Q. So hard that you could pick it off or scale it off?

A. My recollection is that it stuck pretty tight.

Q. You don't know, of your own knowledge, what was done at the refinery after it was removed to Petroleum Centre, except in a general way?

A. Not especially, except in a general way.

WM. L. ROBINSON.

JOHN S. ELDRIDGE, being duly sworn, deposes and says:

Q. What is your name, age, residence, and occupation?

A. John S. Eldridge; age, 49; residence, Conneautville, Pennsylvania; I am running a billiard-room at the present time.

Q. How long have — resided at Conneautville?

A. Thirty-odd years, in and about Conneautville.

Q. Did you ever work in any oil refinery in Conneautville; if so, when and for whom?

A. I worked in an oil refinery here, the only refinery that ever was here, to my knowledge; it was run by Robinson & Sargent; William L. Robinson and R. H. Sargent.

Q. When did you begin work there?

A. If I remember right, I worked to help build the refinery; I think it was the fall of 1860 or of 1861; I worked there for more than two years off and on while it was running.

Q. What did Mr. R. H. Sargent do at the refinery?

Q. When we first commenced I think we had a man named Towner, a chemist; Sargent oversaw the work, and he

334 would take hold and help do some things there during that time; after Towner went away Sargent attended to the refining of the oil, until I got accustomed to it and could attend to it myself; he was not always there.

Q. What, if any, way did you practice at this refinery while you were there to line the oil barrels?

A. We glued them; it was done by heating the glue and pouring it into the barrels while hot. We put the bung in the barrel then and rolled it around so that the glue would come in contact with the barrel inside.

Q. How did you make this glue or did you buy it?

A. We first commenced and used glue that we bought; then after a short time we went to getting scraps at a tannery and boiling them.

Q. What do you mean by scraps?

A. I mean the clippings of the hides.

Q. Where did you get these scraps?

A. At a tannery in Conneautville then kept by Daniel Hammon, which was about thirty rods north of our refinery; Mr. Hammon has not lived here for a number of years; there is still a tannery at the place where Hammon had it.

Q. Did you personally get any scraps at said Hammon's tannery for use in the refinery?

A. Yes, sir.

Q. How often?

A. That I could not tell you; when we got out we would go and get more; sometimes I think Hammon sent them over.

Q. What was done with the scraps after they were brought to the refinery?

A. We boiled them until they became a glue; we had a stove in the building where we stored barrels.

Q. How did you line the barrels?

A. I explained that before. We poured the glue in hot.

Q. What do you mean by glue; do you mean what was in the kettle after boiling the scraps?

A. Yes, sir.

335 Q. You poured this hot glue into the barrels?

A. Yes, sir.

Q. And rolled them around after bunging them up?

A. Yes, sir.

Q. What did you do then?

A. We unbunged them and let that portion run out that did not adhere to inside of the barrel.

Q. Do you remember how long you boiled the scraps?

A. No, sir; I never kept the time. We used to put them in the kettle or boiler and boil them.

Q. Would you fill the boiler with the scraps?

A. Very nearly; put some water in it. We used a skimmer also to skim out the dirt that was in it.

Q. How large a business did you do there, if you remember?

A. We had two eight-barrel stills running; two of us were generally able to do the work.

Q. Do you remember what the consistency was of the hot liquid which you produced from the scraps?

A. I do not know as I could tell exactly; anybody who was acquainted with glue would know; when the glue was warm *and* we took it out of the kettle.

Q. What kind of lining was made in the barrels from the process you have described; was it good or bad?

A. We considered it good.

Q. Are you able to tell how many barrels were lined at the said refinery by the process described by you?

A. Oh, no, sir; I couldn't tell, because we used it for a long time.

Q. And the scraps which you used you obtained from Hammon's tannery altogether.

A. Yes, sir. I don't remember getting any scraps at any other place.

336 Q. Is there anybody here in Conneautville who worked in Hammon's tannery at the time when you got these scraps from that tannery?

A. Yes, sir; Mr. Munch.

Q. What did you call this process?

A. We used to call it gluing the barrels.

Cross-examination waived.

JOHN S. ELDRIDGE.

It is admitted by counsel for complainant that Herman Munch, of Conneautville, Pa., if produced to testify for the defendant, would testify that he worked for Daniel Hammon, above mentioned, and delivered to the refinery of Sargent & Robinson, in Conneautville, scraps of hides from time to time during the period testified to by the witnesses.

United States Circuit Court, Southern District of New York.

EDWARD W. LEGGETT
vs.
STANDARD OIL COMPANY.

Deposition of George H. Hopper, a witness called on behalf of the defendant, taken before Joseph Gutman, Jr., examiner, at No. 52 Wall street, New York city, on the 11th day of November, 1887.

Present: Edwin M. Felt, for complainant; Charles C. Beaman, for defendant.

The witness, being duly sworn, testifies as follows:

337 Examined by Mr. BEAMAN:

Q. 1. What is your name, residence, and occupation?

A. George H. Hopper; residence, Unionville, Ohio; occupation, manager of the preparation of barrel department for the Standard Oil Company. That is my title.

Q. 2. What have you had to do with the barrel department of The Standard Oil Company of Ohio, the defendant in this action?

A. I have had the active management of the preparation of barrel department since 1869 up to, perhaps, four years ago. Since that time I have ceased to have active management and have a general management.

Q. 3. When you had active management of the barrel department of that company where did you reside?

A. In Cleveland, Ohio.

Q. 4. Do you remember the time when Mr. Plumer came to Cleveland, Ohio, and there set up a process of manufacturing glue?

A. I do; in '74.

Q. 5. Describe the process of gluing the inside of barrels that was in use by the Standard Oil Company of Ohio at its works in Cleveland, Ohio, from the time you went there in '69 until '74, when Mr. Plumer came there.

A. Well, sir, we purchased what is termed dry glue. We took the proper quantity of such dry glue and placed it in what we call a jacket kettle, added water to same, and put the steam onto the kettle and heated it up to a certain temperature, at which time it was ready to apply to the inside of the barrel.

Q. 6. Describe this jacket kettle.

A. Well, it is a cylinder kettle with two sides, the steam being upon the inside, of course.

Q. 7. Between the two cylinders?

338 A. Between the two cylinders; it is an iron kettle made in the shape of a half globe.

Q. 8. And is heated by the introduction of steam between the lining and the outside?

A. That is right.

Q. 9. After this hard glue had been reduced to the proper temperature and consistency, how did you use to glue the inside of the barrels?

A. We placed the barrel beside the kettle and introduced a funnel into the bung-hole; our custom was to dip one gallon of the liquid glue into a barrel, and then stop the bung-hole with a bung and shake the barrel thoroughly by rolling and shaking, which generated steam and also spread the glue.

Q. 10. Spread the glue where?

A. Upon all parts of the inside of the barrel, heads and sides; the pressure of steam was for the purpose of finding defects in the barrel, such as worm-holes; the steam would escape through any hole or defect, which would be plugged up, and then the barrels were placed upon troughs and the surplus glue allowed to run out.

Q. 11. Bung taken out?

A. Yes; and the surplus glue allowed to run out of the barrel into these troughs from which the glue ran back into a kettle or receptacle that we had for that purpose; the same glue was put back into the kettles and the surplus glue used right over again, until it was all consumed.

Q. 12. After the surplus glue had drained out of the barrels, what was then done?

A. The barrels after remaining upon the troughs sufficiently long for the glue to set—that is, set so that it would not run, so that it would stay, then the barrels were taken and put into store for the purpose of drying; it usually takes forty-eight hours—two or three days—to dry, according to the temperature of the weather, before filling.

Q. 13. How much are they allowed to dry?

339 A. To a state very similar, perhaps, to India rubber, if you can so describe it.

Q. 14. And in that condition they were filled?

A. In that condition they were filled, having yet considerable moisture in the glue.

Q. 15. Was this process used continuously from the time you went to Cleveland, from '69, until Mr. Plumer came there, in '74?

A. Yes, sir.

Q. 16. With any variations that you know of?

A. None of any importance.

Q. 17. Had it been used before you went there, to your knowledge, before '69?

A. Yes, sir.

Q. 18. How long before?

A. Why, I don't know that there was ever any other way of doing it; I have never heard of any other way of gluing barrels but in that way; that is the way I adopted; that is the system I found when I went there; I never heard that they had any other.

Q. 19. To what extent per month were barrels glued in this way from '69 to '74?

A. Well, of course to a less extent in '69 than '74, but anywhere from two to six or eight thousand barrels a day.

Q. 20. Was this plan satisfactory so far as the lining of the barrels was concerned and protecting of oil in the barrels from leaking?

A. Yes, sir.

Q. 21. When Mr. Plumer came there, in '74, what, if any, change was made?

A. Why, he put up a glue factory and made glue, and delivered it to us in a gelatine form.

Q. 22. How did this gelatine form differ from ordinary commercial form or hard glue, as you describe it?

A. In the one case—in the commercial form or hard glue—we would simply have to get it back into the same state that Plumer delivered it to us; we had to add water to the dry glue, and
340 in the Plumer glue the water was already in the gelatine.

Q. 23. The glue factory that Plumer set up, if I remember his description of it, was substantially as follows: He first had tanks in which he boiled his scraps from which the glue was made, and then passed the liquid glue by pipes from those tanks into vats. Was that the general process?

A. Yes; after the stock got into the factory. There is a process gone over with the stock before it goes into the factory, a liming process. The stock, as it is bought, he put into vats and limed it, and after remaining there a certain time it was in fit condition to put into the factory to go through the process you speak of and put into the boiler and boiled, and then run into a condenser or evaporator, it being too thin as it came from the boilers to apply to our barrels.

Q. 24. When it came from the barrels it was run into these evaporators?

A. Yes, sir.

Q. 25. What were they?

A. Well, they may be made in different ways.

Q. 26. The ones you had?

A. Well, they were a jacket kettle—jacket tub—made of iron and steam introduced between the jacket's sides.

Q. 27. If I understand you, then, after the glue was made in the tanks and kettles in which the scraps were boiled the product was

run into another kettle where heat was applied and evaporation continued?

A. Yes, sir.

Q. 28. To what state was the evaporation continued in this second kettle, which I will call the evaporator?

A. Well, until it was condensed to a consistency which would conform with our wants in the barre- house where we glued the barrels. It was taken from these evaporators and pumped right direct to us, and the glue was supposed to be as near to our
341 wants as possible. Sometimes we may have had to add a little dry glue to thicken it up, or perhaps the reverse, had to add a little water.

Q. 29. When it was pumped from these evaporators to your works where did it go?

A. Into our glue kettles; what we called our glue kettles.

Q. 30. The same as the ones you described as being in use in this glue factory?

A. I don't know as they were the identical kettles; we changed the manner of making our kettles once or twice.

Q. 31. After the glue that Plumer had made in this glue factory and evaporated in these evaporators had reached your jacket kettles, how did you carry on after 1874 the process of gluing barrels?

A. Precisely the same as before.

Q. 32. Precisely the same as from 1869 on?

A. Yes, sir; precisely the same as we did prior to Mr. Plumer's coming.

Q. 34. Was there any difference in the result?

A. None that we know of, except perhaps that a better glue was gotten by reason of making our own, it being purer.

Q. 34. You mean by that that a good deal of glue in commerce is more or less adulterated?

A. Yes; more or less adulterated. I am not a glue manufacturer, but as I understand it they take different grades of glue from the same stock, where in our case we ran it all in; we got pure glue without any of the better qualities having been taken out.

Q. 35. So far as you know, was there any difference whatever in the extent to which the glue penetrated the barrels, whether the barrels were lined with glue such as you used before Plumer came there and such as was made with the dry glue or such as you used after Plumer came there?

A. No, sir.

342 Q. 36. Is there any difference in any way between the results in the use of the glue which has never been allowed to go into the hard state of commerce or in the use of the glue such as has never been evaporated to that hardness?

A. No difference whatever, except perhaps what I have stated; in the quality.

Q. 37. What do you mean by the quality?

A. The quality of the gelatine glue.

Q. 38. What do you mean by quality; pureness?

A. Yes; its adhesiveness.

Q. 39. Adhesiveness by what reason?

A. By reason of the strength it contains; by reason of its purity. I don't know how to explain it any differently.

Q. 40. Since 1874, in the making of glue, have you from time to time allowed the glue in the evaporators to get cold and jelly?

A. Oh, frequently.

Q. 41. Does that produce any difference in the result?

A. No, sir; not that we know of.

Q. 42. Have you from time to time taken more or less of the gelatine glue in the evaporators and dried it as ordinary glue is dried for the purpose of testing the quality of it?

A. We always do it—that is to say, we do it quite often; perhaps once in a week—sometimes perhaps twice in a week.

Q. 43. What is this done for?

A. Well, we do it more for the purpose of having a check upon the factory, to know that they are giving us good glue.

Q. 44. Does the glue that you take from these evaporators by drying and exposure to the air become hard dry glue of commerce?

A. It does. Simply dry out the moisture or water and you will have dry glue.

Q. 45. Has the glue in the ordinary process that you use it, as it stands in the evaporator, been so far evaporated that if it was
343 allowed to cool it would make a jelly from which slices could be cut and dried in the ordinary way in which commercial glue is cut and dried?

A. Yes, sir.

Cross-examination by Mr. FELT:

X Q. 1. Mr. Hopper, what do you know about the manufacture of glue?

A. Well, when you ask me about the manufacture of glue I don't know that I know very much.

X Q. 2. You have never been engaged in the manufacture of glue?

A. Never been engaged in its manufacture excepting——

X Q. 3. Have you had any other experience with glue than what you have got with the Standard Oil Company?

A. Glue that I have seen and experimented with and tested outside?

X Q. 4. Since your connection with the Standard Oil Company?

A. Yes; brought about by experience.

X Q. 5. Do you know what process glue is subjected to after it has reached the gelatine condition that you produced in your factory?

A. I thought I did. I don't know that I know it in all its details. I simply know that you can take the gelatine glue and slice it up and put it upon nets and dry it until we can get what is commonly termed dry glue. Now, regular glue-makers may have other ways of doing that which I do not understand, with instruments, &c., but I know that that is the result.

X Q. 6. And you have had no experience with its manufacture that would indicate to you whether glue allowed to harden as you suggested would make a good or a poor glue—a commercial glue—have you?

A. You will have to ask me that question over again.

344 X Q. 7. Question repeated.

A. I know this—that we have had sufficient quantities of the glue that we had dried in that way to use over again and know that it is just as good after we have once dried and then diluted it and brought it back to its original consistency as it was originally.

X Q. 8. You have never been engaged in the manufacture of glue outside?

A. No; not to say engaged in the manufacture. I have had some little control, but I do not consider myself a glue manufacturer.

X Q. 9. Please detail the various steps followed after 1874 in the manufacture of this liquid glue as carried on by Mr. Plumer.

A. Well, the stock arrived there in its crude state——

By Mr. BEAMAN:

Q. 10. What did it consist of?

A. Well, hide stock; different animal hides; buffalo, at one time.

Cross-examination resumed:

Answer to cross-question 9 continued:

The stock arrived at the works in its crude state and was then placed into these tubs or vats and went through a liming process, which I understand was for the purpose of cleaning the fatty substances and purifying it, and then it was taken into the factory and washed—thoroughly washed with fresh water in vats. From these vats it was put into boilers and boiled and the boilings were then run into these evaporating tubs or kettles and there evaporated to its proper consistency as found by experience in our factory and pumped to our glue kettles in that state, and then it was put into the barrels—about a gallon in each barrel—and shaken up

345 and placed upon the skids or troughs and the surplus glue allowed to run out and back into a kettle from which we took that surplus glue and put it back into the glue kettle and used it over again.

X Q. 11. Have you read Mr. Plumer's deposition?

A. No, sir.

X Q. 12. What had you to do with the manufacture of glue during Mr. Plumer's connection with the company?

A. Nothing at all. What I state is just my observation.

X Q. 13. You observed what he did?

A. Yes; just from my own observations, having no charge in the management.

X Q. 14. And has that same process of manufacture of the glue and the coating of the inside of the barrel continued from that time until the present?

A. From anything I know of; yes.

X Q. 15. Well, you are still connected with the company, are you not?

A. Yes, sir; but not continuously—so much as I was at that time.

X Q. 16. Can you give us an estimate of the number of barrels glued—an average daily estimate?

A. From when—what time?

X Q. 17. From that time on.

A. From the time of Mr. Plumer's coming?

X Q. 18. 1874.

A. Up to the present time?

X Q. 19. Yes.

A. Well, that is a very hard thing to do. We have had years when we have turned out as high as twelve thousand barrels a day sometimes; other days, when business was not nearly as good, we did not turn out nearly so many. If you ask me for my judgment, on an average I would say five thousand.

346 X Q. 20. Is that confined to all the factories or simply to the Cleveland factory?

A. Merely to the Cleveland factory.

X Q. 21. How many do they glue there now per day on an average?

A. Anywhere from three to six thousand.

X Q. 22. How many factories have they?

A. Just one; that is for the——

X Q. 23. How many factories have they where they glue barrels?

A. I only know of but one; they may have more.

X Q. 24. You don't know?

A. I don't know of but one.

X Q. 25. They have one at New Jersey, have they not, at Constable Hook?

A. I answered that question; I supposed you meant Cleveland.

X Q. 26. How many factories have they?

A. Only one that I know of, and that is at Cleveland, Ohio.

X Q. 27. You know Mr. Leggett, the plaintiff, do you not?

A. Yes, sir; I do.

X Q. 28. When did you first make his acquaintance?

A. Well, I don't know as I can say; it was a good many years ago; I should think it was prior to the—well, I would not pretend to say.

X Q. 29. Was it prior to the time when Mr. Plumer came?

A. Well, I would not pretend to say.

X Q. 30. Prior to '74?

A. I could not say; I only know it was a number of years ago.

X Q. 31. Was he then in the employment of the Standard Oil Company?

A. Not to my knowledge.

X Q. 32. Do you know whether he was subsequently?

A. Not to my knowledge.

347 X Q. 33. Did you meet him in connection with this process?

A. I never heard of him having any connection with the Standard Oil Company in any sense.

Redirect examination:

R. D. Q. 1. Mr. Hopper, how did you determine whether the glue that you put into these barrels was of the proper temperature or consistency?

A. By thermometers, the temperature; and the consistency we arrived at with instruments and also by experience. It is our custom when we start in the morning to glue a few barrels and knock the heads out and look on the inside of the barrels for the purpose of seeing what the coating is. If it be too heavy, why we add water; if too thin, we add dry glue or a heavier glue than is in the kettle.

R. D. Q. 2. Had this determination of temperature and consistency been arrived at and practiced by you before '74?

A. Yes, sir; I know of no other way of doing it.

R. D. Q. 3. Have you since '74 applied the glue at the same temperature and same consistency and after the same experiments as before?

A. Precisely.

R. D. Q. 4. Are you acquainted with the process by which any other parties than the Standard Oil Company of Ohio glue the inside of their barrels?

Objected to as incompetent and immaterial.

A. Why, yes.

R. D. Q. 5. What other companies?

A. I am acquainted with the manner in which the Standard Oil Company of New Jersey applied it.

R. D. Q. 6. Any other company?

A. The Standard Oil Company of New York.

R. D. Q. 7. Have you charge of the general gluing of bar-
348 rels for any other companies than the Standard Oil Company of Ohio?

A. Yes, sir.

R. D. Q. 8. How long have you had such charge?

A. Some of the companies I have had charge about twelve years, others possibly eight.

R. D. Q. 9. During the last ten years what general proportion does the barrels that have been glued at Cleveland by the Standard Oil Company *at* Ohio bear to the number of barrels that have been glued under your direction for other companies?

A. I should say that the Standard Oil Company of Ohio glued one-fifth of all the barrels that I have charge of; between a fourth and a fifth; this is a guess.

R. D. Q. 10. Have any of the barrels that have been glued by these other parties under your direction for the last twelve or more years, except those that have been glued for the Standard Oil Company of Ohio at Cleveland, been glued by the use of the process that you have described as introduced at Cleveland after '74? I mean by that by the process in which the glue was made and run into evap-

orators and there evaporated and then pumped directly from there while warm into glue kettles.

A. There has.

R. D. Q. 11. Whereabouts?

A. Here in New York and about Bayonne.

R. D. Q. 12. Is it so used there now?

A. Yes, sir.

R. D. Q. 13. To what extent?

A. Oh, I presume that three-quarters of the barrels that are glued in these refineries, what we term in and about New York, within a radius of five or six miles, are being glued by a gelatine glue.

R. D. Q. 14. How is that gelatine glue carried and delivered to the factories?

A. It is run into barrels and delivered in barrels.

349 R. D. Q. 15. In what state is it in these barrels as it is taken therefrom?

A. Why, it runs into them in a liquid state and arrives very frequently in a gelatine or a jelly state.

R. D. Q. 16. And is delivered as gelatine glue to the company's barrel works, as I understand it?

A. Yes, sir.

R. D. Q. 17. Then it does not run directly by pipes from the evaporators to the glue pots, but, as I understand you, into barrels, and in that way is transferred as an article of sale or commerce to various barrel works. Is that what you mean?

A. That is what I mean.

R. D. Q. 18. Is there any other place than that of Cleveland, Ohio, where the process such as you have described at Cleveland, Ohio, of running the glue into the evaporator and running it direct from that evaporator into glue kettles is practised?

A. There is not.

R. D. Q. 19. What proportion of the barrels that have been glued under your direction for the last twelve years have been glued by the use of dry glue put into the glue pots and the application of water and heat thereto until it got to the proper consistency?

A. Since '74?

R. D. Q. 20. Yes.

A. Well, prior to a year or a year and a half ago they were all lined with the dry glue except those which were glued by gelatine glue in Cleveland, Ohio. Does that answer your question?

R. D. Q. 21. For all glued; but what proportion did that bear to those glued at Cleveland, Ohio?

A. Prior to a year and a half ago it would bear the proportion of three-fourths dry glue and one-fourth gelatine glue.

R. D. Q. 22. And now within the last year or two what proportion by the Cleveland process and what proportion by the process of gelatine glue in barrels?

350 A. Well, since '74 I should say——

R. D. Q. 23. Since the last two years.

A. Oh, both factories together, I should say, have furnished glue,

perhaps, for one-half. I don't know as that is quite right or not, but that is as near as I can tell.

R. D. Q. 24. So far as you know, is there any difference in the perfection with which the barrels are glued or lined, so far as the lining is concerned or so far as preventing the leaking is concerned, whether they are lined with glue according to the process you have described as in use at Cleveland since '74 or lined with glue that has been made into gelatine form and sent in barrels and taken out in a jelly or lined by the use of dry glue of the same quality of dry glue reduced to a liquid form as was used by you in Cleveland, Ohio, prior to '74?

A. I know of no difference.

Recross-examination:

Q. You have been asked with reference to determining the consistency of this liquid glue. What do you understand by consistency?

A. Why, its density.

Q. By density do you mean its specific gravity?

A. Well, it can be arrived at in that way. It means the absence or otherwise of water.

Q. That is how near it approaches to pure glue. Is that it?

A. How near it approaches to pure dry glue.

Q. How do you determine that?

A. My practical way of doing it was as I have described—by taking the heads out of the barrels and observing the coating.

Q. That is, to see how hard it was?

A. No; to see how heavy the lining was on the barrels.

Q. How thick the lining was?

A. Yes; to see how thick the lining was.

351 Q. And that you did after Mr. Plumer left the employment of the company?

A. I have always done it, sir; before he came and after he left. We know of no other practical way of doing it.

By Mr. BEAMAN:

Q. The process of gluing barrels at all of those various works that you have described, including Cleveland, Ohio, is under your general direction and subject to change if you should so decide, is it not?

A. Yes; I have the power to make any changes in that department that I deem proper.

By Mr. FELT:

Q. Why did you transfer this glue in barrels instead of running it in pipes?

A. Well, a matter of convenience.

Q. It could be pumped just as well as transferred in barrels?

A. It could be pumped.

Q. Do you make any distinction between the jelly that you speak of and liquid glue?

A. In what respect?
Q. In any respect.
A. Why, hot liquid glue allowed to become cold takes the form of a jelly. It is one and the same thing when cold and when warm.

By Mr. BEAMAN:

Q. A hard glue and a liquid glue are one and the same thing?
A. Introduce the same water that you have in the dry or gelatine glue and you will have the same thing.
Q. Does not the glue that you run into these barrels, transported from place to place, become jelly before it is used?
A. Yes, sir.
352 Q. And then afterwards by heating it becomes liquid glue?
A. That's it.

GEO. H. HOPPER.

Counsel for defendant offers in evidence certified copy of the file-wrapper of the original patent and contents here in question, and also certified copy of the file-wrapper of the reissued patent and contents, and the same are marked respectively file-wrapper original patent and file-wrapper reissued patent.

Testimony of Adrien Queru, for the Defendant, before Joseph Gutman, Jr., Examiner.

N. Y., *November* 16, 1877—11 a. m.

Present: Wm. S. Beaman, Esq., counsel for defendant, and Mr. Felt and Mr. Reed, counsel for complainant.

At 12 m., the witness not having arrived, the examination is adjourned to 3 p. m. of same day.

JOSEPH GUTMAN, JR., *Examiner.*

N. Y., *November* 16, 1887—3 p. m.

Present: Counsel for the parties as before.

ADRIEN QUERU, a witness of lawful age, produced on the part of the defendant, having been by me first duly cautioned and sworn to testify the truth, the whole truth, and nothing but the
353 truth in the matter of the controversy herein, and being examined by Mr. W. S. BEAMAN, counsel for defendant, deposes and says as follows:

Q. 1. What is your name, age, residence, and occupation?
A. My name is Adrien Queru. I am 52 years old. I reside at No. 328 Ninth avenue, N. Y. city. I am in the laundry business.
Q. 2. How long have you been engaged in the laundry business?
A. About ten years in the city of New York.
Q. 3. In what business were you engaged prior to your commencing the laundry business?
A. The glue business.
Q. 4. Where?
A. At Rahway, N. J.

Q. 5. When did you commence that business at Rahway?

A. In 1868 or 1869. I think it was 1868.

Q. 6. How long did you continue in the glue business at Rahway?

A. Until 1873.

Q. 7. Were you alone in that business or was any one associated with you; if so, who?

A. On the start my father, Edmund Queru, was with me.

Q. 8. Did you have a factory at Rahway; if so, where?

A. The first one was right in the village. We stayed there about a year and a half, and then we moved a little bit outside of Rahway, on the Rahway river, where we took a very large building.

Q. 9. In what business had you and your father been engaged and where prior to going to Rahway?

A. We were manufacturing patent medicine in Morrisania.

Q. 10. What did you manufacture at Rahway?

A. Glue.

Q. 11. Describe the process which you carried on there in the manufacture of glue.

354 A. We first gathered our glue stock, which was mostly hide scraps from tanneries, then we cured the stock with lime, then washed it out to neutralize the lime and acid, then put it in the kettle and boiled it, and when it was boiled enough and I thought the glue was thick enough I ran it out. It generally takes an hour to an hour and a half, according to the stock. When we first started there, at our first factory, we ran it into whiskey barrels. That is the way we used to sell it and we also used to sell it in tubs.

Q. 12. In what condition was this when you shipped it or sold it?

A. It was what we call size.

Q. 13. Was it in liquid form?

A. Well, of course, when it was sold it was chilled and was no more liquid.

Q. 14. Can you describe more definitely the consistency of the material?

A. I don't see how I can. It was a jelly. It was liquid glue chilled. It was size. When it runs out of the kettle it was boiling hot and pouring it into a whiskey barrel it soon gets chilled.

Q. 15. Can you state about how much of this kind of glue you made daily while you were in this Rahway factory?

A. Yes, sir; there was one firm that used 3 or 4—say about 3 whiskey barrels three times a week. There was another firm that used to take a couple of barrels—two barrels—and then again we used to sell a few tubs to New Brunswick, N. J.

Q. 16. What class of customers used to purchase this article from you?

A. Picture-frame makers, wall-paper makers, and I think some has been sold for oil, but I could not swear to it—for oil barrels—through a broker; I could not swear to it. The broker I refer to was named Cohn; he kept in Pearl street, New York, I think.

355 X Q. 17. Do you remember the names of any of the frame-makers or wall-paper manufacturers?

A. Yes, sir; Gardners, of Spruce Run, now Gardner's Station, N. J.; he was a picture-frame maker. There was another frame-maker at the same place, whose name I don't remember, who used to buy a couple of barrels a week—Janeway, wall-paper manufacturer, of New Brunswick, N. J.; Fred'k Beck, of New York, a wall-paper manufacturer. We sent some to Hall & Garrison, picture-frame manufacturers, of Philadelphia.

Q. 18. You stated that before you boiled these hide scraps you limed them. What would have been the result if you had not limed them and had boiled them in the kettle?

A. The glue would not be as white and would smell.

Q. 19. Did you dry any glue at Rahway?

A. Yes, sir.

Q. 20. To whom did these factories belong; did you own them or lease them?

A. We leased them.

Q. 21. Did you make this liquid glue during all the time you were at Rahway?

A. Yes, sir.

Q. 22. Did you and your father during any portion of the time that you carried on this business at Rahway have any partner?

A. Yes, sir. Our first partner was Andrew Parker. Afterwards it was turned into the Rahway Glue Manufacturing Company, composed of my father, myself, and a man by the name of Rogers.

Q. 23. When did you give up this business at Rahway?

A. In 1873.

Q. 24. Where did you then go?

A. To Marlborough, N. Y., about ten miles above Newburgh. We all three went up there and bought a building and started a glue factory. We remained there about a year.

356 Q. 25. Did you make the same kind of liquid glue there?

A. I don't think we made any there. We only made dry glue there.

Q. 26. Is Mr. Rogers alive, to your knowledge?

A. I haven't seen him since we gave up business. I don't know if he is living or not.

Cross-examination by Mr. FELT, counsel for complainant:

X Q. 27. Before starting your factory in Rahway, in 1868 or 1869, had you any experience in glue manufacturing?

A. I never manufactured any before, but I knew the theory of making it.

X Q. 28. Why did you stop manufacturing at Marlborough?

A. Because we burst up as we hadn't money enough.

X Q. 29. And at Marlborough you manufactured only hard or dry glue?

A. Yes, sir.

X Q. 30. What was the difference in the process of manufacture used by you at Marlborough in making dry glue from what you used at Rahway in making liquid glue or size?

A. No difference whatever; it was the same thing.

X Q. 31. What did you do to the liquid glue in making it into hard or dry glue?

A. I used to condense it with an evaporator, then slice it up and dry it on nets.

X Q. 32. Did the stock require any more boiling for making dry glue than for making sizing?

A. No, sir; exactly the same thing.

X Q. 33. Did you remember any difficulties in drying the glue after you had condensed it to make it into hard glue?

A. No, sir—that is, I did it on the start, but after I got
357 experience I invented a drying-room in which it could be dried in four or five hours, and less time too.

X Q. 34. During what season of the year did you make dry glue?

A. Pretty nearly the whole year except July and August.

X Q. 35. Why did you stop during July and August?

A. Because it don't pay to make it in these two months.

X Q. 36. Please explain your last answer, why it don't pay.

A. In the first place it is pretty hard to cure the glue stock. It is apt to get sour if you don't look out. Then the glue has to be condensed a little lower, a little thicker, and we have to use ice to cool it down. That is for dry glue. These are about the only reasons. The glue can be made during the whole summer, but it don't pay. I have made it.

X Q. 37. Has the weather or condition of the atmosphere anything to do with drying glue?

A. No, sir; not with my process.

X Q. 38. Has it under anybody's process that you know of?

A. I don't know about the others. I mind my own business.

X Q. 39. Where the glue is dried, not in a drying-room as you have stated, has the weather or atmosphere anything to do with it?

A. Yes, sir; sometimes.

X Q. 40. What has it to do with it? How does it affect it?

A. If the weather is damp it may mould the glue.

X Q. 41. How long do you say you boiled your scraps when you made size?

A. About an hour or an hour and a half, according to the stock.

X Q. 42. Please explain what you mean according to the stock.

358 A. What we call stock is what we use for making glue; there is different kind of stock; of course some stock is harder to boil; if you take rabbit skin and coney skin it will boil very quick. The fleshings that we get from the tanneries boil very quickly.

X Q. 43. But your average time of boiling was from an hour to an hour and a half?

A. An hour to an hour and half; sometimes two hours.

X Q. 44. What kind of a vessel did you boil your stock in?

A. Wooden.

X Q. 45. Please describe it, giving its dimensions as near as you can.

A. It was a kind of wooden tank, a straight wooden tank, about four or five feet deep—a round tank, three or four feet in diameter.

X Q. 46. How did you get your heat?

A. Through a steam pipe.

X Q. 47. Arranged outside or inside?

A. Inside.

X Q. 48. Did you put anything into this wooden tank with the scraps?

A. No, sir.

X Q. 49. What degree of heat did you apply to the scraps, as near as you can tell?

A. Boiling point, 100° centigrade.

X Q. 50. How did you lime your stock before putting it into the tank?

A. I put in lime water.

X Q. 51. You mean you soaked the scraps in that?

A. Yes, sir.

X Q. 52. While you were making size did you evaporate it or was that only done when you were making dry glue or hard glue?

A. I never evaporated the size only for dry glue; it saved labor.

X Q. 53. If instead of running the size into the whiskey
359 barrels, as you have stated, you allowed it to cool and cut it into strips and dried in on nets, would it have made hard glue?

A. Yes, sir.

X Q. 54. Would it have made as good hard or dry glue as you made up in Marlborough?

A. Yes, sir.

X Q. 55. Would it have been what is known in the market as dry glue?

A. Yes; that is dry glue.

X Q. 56. And of good quality?

A. Yes, sir.

X Q. 57. How did you happen to be a witness in this case, if you know?

A. I received a notice from Mr. Beaman.

X Q. 58. Was it through Mr. Beaman's acquaintance with you or through your acquaintance with the Standard Oil Company?

A. No, sir; not at all. I received a note to come down here. I didn't know about what.

X Q. 59. How did the defendants happen to get hold of you as a witness in this case and ascertain what you knew about glue?

A. I don't know. I can't tell. I suppose the Standard Oil Company knows me as a glue-maker.

X Q. 60. Did you ever sell glue to the Standard Oil Company?

A. Not to my knowledge. Some years ago the president of the company engaged me as a glue-maker—some eight, nine, or ten years ago. He wanted me to start at half past four in the afternoon from here, and I told him that I couldn't go right away, that I had

a buggy and rockaway for sale, and I asked him for a week. I went to Marlborough and sold my buggy and rockaway right away. I sold it very cheap, too. Then about three or four days after the interview I received a letter in which he said that he had arranged with his foreman, and I was left here. That is all I know about. This was in New York some ten years ago. My memory is very bad.

360 X Q. 61. Did you ever work for the Standard Oil Co.?
A. No, sir.

Redirect:

R. D. Q. 62. Did you patent the dry-room, which you say you invented?
A. No, sir.
R. D. Q. 63. Where did you purchase your glue stock; from what parties, if you remember?
A. From tanneries; some in Elizabeth, some in Newark.
R. D. Q. 64. Have you any interest in this case?
A. No, sir.
R. D. Q. 65. In your answer to the 60th cross-question you stated that your memory was very bad. Did you mean by that that your memory is bad as to the matters given by you in testimony to-day?
A. No, sir; I don't mean that.
R. D. Q. 66. In stating that your memory was very bad, to what did you mean that to apply?
A. I mean to the question that was asked me that I could not remember the date of that interview.

ADRIEN QUERU.

Sworn to before me—

JOSEPH GUTMAN, JR., *Examiner.*

361 U. S. Circuit Court, Southern District of New York.

EDWARD W. LEGGETT
vs.
STANDARD OIL COMPANY. } In Equity.

Testimony for defendant taken pursuant to the 67th rule in equity, as amended, before Henry A. Clark, Esq., special examiner.

ERIE, PENN., *Nov.* 29, 1887—11 a. m.

Met pursuant to notice.

Present: Edwin M. Felt, Esq., of counsel for complainant; Wm. S. Beaman, Esq., of counsel for defendant.

WARREN W. GREEN, being duly sworn and examined by W. S. BEAMAN, on behalf of the defendant, deposes and says:

Q. 1. State your name, age, residence, and occupation.
A. 52 years old seventh day of last September; reside Richmond township, Crawford Co., Penn. I am a lumberman and farmer.

Q. 2. How long have you resided in Richmond township?

A. Resided there since 1836.

Q. 3. In what business were you engaged in 1860 and 1865, inclusive?

A. In 1860 in the hotel business, and quit that. In spring, 1861, I built a cooper shop in Richmond and continued that busi-
362 ness and the oil business till winter, 1865, or spring; I do not remember precisely.

Q. 4. What kind of barrels did you make?

A. Oil barrels entirely.

Q. 5. To whom did you sell the oil barrels?

A. I sold to different parties; some to Messrs. Kennedy & Gagan, oil-refiners in Erie, Pa.

Q. 6. Where was their refinery in Erie?

A. I do not remember the street. It was a street coming in from Waterford, above the Morton house.

Q. 7. Do you remember when you first commenced to sell barrels to Kennedy & Gagan?

A. I do not remember. It was some time in the winter of 1861 and 1862.

Q. 8. Did you prepare the oil barrels? I mean did you line them in any way before delivering them? If so, state fully how you lined them.

A. We had a great many staves that were pin-wormed, and I had a foreman named Williams, who had been a cabinet-maker. He commenced to experiment with glue and other materials such as he had used in his cabinet business. Here at Erie I saw at some of the refineries that they were heating up glue and pouring it into the barrels. I went home and told Williams what I had seen. He went to work. There was an old tannery close to us. It was called the John Brown tannery. This man Williams, when I had told him what I had seen here, and some of the other hands gathered up some of the glue scraps and pieces of hide about the tannery, took it and brought it to the shop and put it into a big cast-iron kettle, soaked it up, cooked it, prepared it, made a glue or solution out of it, and poured it into the barrels; poured it into the barrels hot and bunged it up and rolled the barrels about so that they would be coated on the inside. Before it got cool we would turn the solution out, heat it, and take another barrel and repeat the operation.

Q. 9. What kind of lining did this process make?

363 A. It closed up the pin-holes and rough places in the barrels and the seams, so that it made them hold oil.

Q. 10. What did you do with those barrels?

A. I used them for putting crude oil in, and others I sold to refineries and to teamsters who were on the road drawing oil.

Q. 11. How long did you continue the process of lining barrels the way you have described?

A. Till I quit the business, in the winter of 1865.

Q. 12. Do you remember the names of any other refiners besides Kennedy & Gagan to whom you sold barrels?

A. Yes, sir.

Q. 13. Who?

A. I sold barrels to Mr. McClintock—Washington McClintock, of Petroleum Centre. I think there was somebody else; cannot remember names.

Q. 14. After commencing the process you have described did you continue to use it?

A. Yes; I used it from the time I commenced it until I quit the business.

Q. 15. Did you procure the hide and scraps at any other place than the John Brown tannery?

A. We gathered up cattle's feet from the places around about among the farmers.

Q. 16. Who was then the proprietor of the John Brown tannery, at the time you were using this process?

A. Almon Clark, a nephew of John Brown.

Q. 17. Describe more particularly the kettle which you used for boiling the hide and scraps.

A. It was a big cast-iron kettle; had it outdoors and built a fire around it; cooked the glue in that way. Then we took another kettle after we got it fixed into glue and took the liquid out of the big kettle we had made the glue in and put it into a smaller sized kettle and set the smaller kettle into the larger and filled the large kettle up with water poured around the small kettle and kept the fire going; heated in that way.

364 Q. 18. In what condition was the material when you poured it into the barrels?

A. We had it in a thin condition, like thin molasses; if it got too thick we poured in more water; we had it so that it would pour good; wash round in the barrel.

Q. 19. Were you engaged in buying crude oil during this time?

A. Yes; and sold it to refineries here in Erie.

Q. 20. Do you know whether Mr. Williams, to whom you have referred, is alive?

A. I do not.

Q. 21. How long has it been since you saw him?

A. I do not remember; it is twelve or fifteen years since I saw him.

Cross-examined by EDWIN M. FELT, Esq., attorney for plaintiff:

X Q. 22. Who first spoke to you about being a witness in this matter?

A. A gentleman by the name of Sargent.

X Q. 23. Mr. Ransom H. Sargent?

A. Yes, sir; R. H. Sargent.

X Q. 24. When was that and where?

A. It was at my place some time in October last.

X Q. 25. What part of the month of October, as near as you can state?

A. Fore part or middle of October.

X Q. 26. Did he tell you whom he wanted you to testify for?

A. No, sir.

X Q. 27. Do you know how Mr. Sargent came to know how you were in this business?

A. No; I do not know.

X Q. 28. Had you told anybody how you lined these oil barrels?

A. Not that I know of. I had not thought of it for many years.

365 X Q. 29. Did Mr. Sargent subpœna you to attend here to-day?

A. No, sir; he did not serve any papers upon me; merely told me to come.

X Q. 30. When?

A. To-day.

X Q. 31 When did he tell you to come to-day.

A. He wrote for me on the 23d of this month; he wrote two letters, notifying me to come to Titusville, Pa.; to be there on Monday morning, November 28, to take the train to come with him to Erie. I did not get those letters until last Saturday night, fore part of the evening.

X Q. 32. Did you come with him yesterday?

A. Yes, sir.

X Q. 33. Arrived here about what time?

A. Three or four o'clock in the afternoon.

X Q. 34. And you have been with Mr. Sargent ever since?

A. Yes, sir.

X Q. 35. How many personal interviews did you have with Mr. Sargent before coming to Erie?

A. Two.

X Q. 36. Where were they held?

A. At my place.

X Q. 37. When.

A. The first one was in the early part of October; the second in November and since election and more than a week ago.

X Q. 38. Was your barrel factory and the place where you filled these barrels with crude oil in the same building?

A. No, sir; it was not.

X Q. 39. Then it was in a separate building?

A. I bought my crude oil in Oil creek; my shop was in Richmond.

X Q. 40. How far apart?

A. Thirty miles.

X Q. 41. Do I understand that you took your barrels to Oil creek and there lined them for holding crude oil, or did you line
366 them at your barrel factory and them take them to Oil creek and then put in the crude oil?

A. Manufactured and lined our barrels at Richmond township.

X Q. 42. Did you line your barrels in the same building in which you made your barrels?

A. No, sir; we had no building. We made this process outdoors, as a woman would make soap.

X Q. 43. What stock did you use?

A. We got this glue scrap and pieces of old hide from this tannery and gathered up around the neighborhood such stuff as would make glue.

X Q. 44. What was this stuff?

A. It was cattle's feet, hide, and such stuff as we could gather up where farmers had been butchering.

X Q. 45. What did you do to it, if anything, before you put it into the kettle?

A. We did not do anything, as I remember. We might have washed the filth off.

X Q. 46. You put it into the kettle as you gathered it, did you?

A. I do not remember that anything further was done with it than to put it into the kettle and to fill the kettle up with water and stir it up and stew it up and get the material into this liquid form.

X Q. 47. Have you ever had any experience in manufacturing glue?

A. No, sir; only this.

X Q. 48. You do not know anything about the processes of glue manufacture, do you?

A. No, sir; I never had any personal knowledge of the glue business other than what I had in this barrel business.

X Q. 50. When you see a quantity of glue you do not know whether it is good or bad, do you?

A. No, sir; I am no judge of the article.

X Q. 51. After you put the scraps into the kettle how much water did you add?

367 A. We added water till we got it into this liquid mass.

X Q. 52. Did you fill the kettle with water?

A. I do not remember; we might have filled the kettle. If we got too much in we boiled the material down till it got into this liquid shape.

X Q. 53. About how many pounds of stock would you put into the kettle for one boiling?

A. I could not say. There might have been ten or fifty pounds. I do not remember.

X Q. 54. The amount of water depended upon the amount of scrap you used, did it not?

A. Yes, sir.

X Q. 55. You had no rule about quantity of water used?

A. No, sir; no scientific rule.

X Q. 56. How long did you boil it?

A. I do not remember.

X Q. 57. How many hours did you boil it?

A. I cannot say.

X Q. 58. Did you boil it six hours?

A. Possibly we did. I cannot tell.

X Q. 59. Did you boil it twelve hours?

A. It might have been twelve hours or it might have been six.

X Q. 60. Then you boiled it till it got to a liquid state, so that you could pour it into the barrel?

A. Yes; we boiled it till we got it into this glue shape—made a glue out of it—so that we could pour it into the barrel.

X Q. 61. After you had lined the inside of the barrel and let the excess run out of the bung-hole, as you have stated, what next did you do?

A. We lay them aside and let them lay a day or two till this substance became hard, and then we sold them to teamsters or took them to the creek. I had a good many teamsters on the road of my own.

X Q. 62. You allowed the barrel to stand till the glue was hard?

A. Yes, sir.

368 X Q. 63. How hard did it get?

A. It would come dry inside, glazed over.

X Q. 64. Did you ever line barrels by boiling down hard or manufactured glue and then pouring that into the barrel?

A. I do not remember as to that.

X Q. 65. Did you examine the inside of these barrels after you had glued them?

A. I believe we did at first, taking a head out occasionally to see what effect it would have.

X Q. 66. On how many occasions did you do that?

A. I do not remember how many.

X Q. 67. A dozen?

A. It might have been.

X Q. 68. A half dozen?

A. Perhaps; I do not remember. We examined it to see what effect it had upon the barrels.

X Q. 69. And that was done when you first commenced to line the barrels by that process?

A. Yes.

X Q. 70. Did you examine them afterwards?

A. I do not know that they were; the hands might have examined them.

X Q. 71. After you had prepared the barrels you sold them to others or filled them with crude oil, did you?

A. Yes, sir.

X Q. 72. You did not see the barrels after that?

A. Yes, sir; saw some of them.

X Q. 73. I mean did you see the inside of the barrels.

A. They frequently had some of their heads knocked out, staves broken, and hoops knocked off. We took them back to repair them and used them over again.

X Q. 74. What test, if any, did you apply, if any, to ascertain whether the barrels were properly lined?

A. We had a bung with a small bit-hole bored in it. We
369 would put that into the bung-hole of the barrel and blow into the barrel. If there were holes in the barrel the air would whistle out.

X Q. 75. If the air did not whistle out through any of the seams or pin-holes you concluded that they were properly lined?

A. We pronounced it a tight barrel and pronounced it fit to sell.

X Q. 76. And that is the only test you applied?

A. Yes; except in the instances where we knocked out the heads, as I before testified.

X Q. 77. Did you know at that time how to test the strength of glue?

A. I did not myself.

X Q. 78. Did you put the pieces of hide and the cattle feet into the kettle indiscriminately together or did you boil them separately or all together?

A. I do not remember as to that. The first of making this glue we got our material from the tannery. About the feet, I do not remember whether they were put in with the scraps of hide or not.

X Q. 79. You stated that you allowed the barrel to stand until the glue became dried?

A. Yes, sir; until it became hard on the inside.

Redirect:

Q. 80. How many persons were employed at your shop?

A. Sometimes ten or fifteen; sometimes not more than four or five—fluctuating times.

Q. 81. Were you personally at the shop all the time?

A. No, sir.

Q. 82. Mr. Williams was foreman of the entire shop?

A. Most of the time.

Q. 83. What did he know about glue?

A. He was a cabinet-maker by trade; that, I guess, was all the trade he did have till he went into the cooper business.

370 Q. 84. Can you state about how many barrels you made and lined at this shop?

A. I cannot.

Q. 85. Were you away from the shop any part of the time?

A. Yes, sir.

Q. 86. What called you away?

A. I was looking after my oil and barrel business and getting material to make these barrels.

Q. 87. Were Kennedy & Gagan and the other refiners to whom you sold them satisfied with these barrels?

A. Yes, sir; rather more so than from any other factory in the city. We tried to get first-class men and to do our work well.

Q. 88. You did not personally collect any of these pieces that were procured from the butchers?

A. I do not remember as to that. Word was given out that we wanted this material and it would be gathered—boys would bring it; we would pay something for it.

Q. 89. How long have you been in the oil-barrel business and oil?

A. I built this shop in the spring of 1861, and I run it till the winter of 1865.

Q. 90. Since then have you been in the oil business?

A. The next year I went to Oil Creek and stayed there in the oil business till 1869 or 1870.

Q. 91. Did you have any reputation for the barrels you sold?

A. Yes, sir. My barrels were judged to be as good or better than any in the country.

Q. 92. They were all lined according to the process you have described?

A. The most of them were. We lined a great many of them that way.

Q. 93. Are Kennedy & Gagan alive?

A. I do not know.

Q. 94. The time for proper boiling varies, does it not, according to what is to be boiled and according to the heat, does it not?

371 A. Yes; it varies. I do not remember the exact time.

Q. 95. How long have you known Mr. R. H. Sargent?

A. I have known Mr. Sargent—that is, have known of him—fifteen years. My personal knowledge is about three years.

Q. 96. Did he call upon you in reference to testifying in this case?

A. His first talk with me was about coopering business—if I ever knew anything about this process. This was the first talk we had.

Q. 97. You told him what you knew about it?

A. Yes; I told him what I could recollect in reference to it.

Q. 98. And afterwards he wrote you to attend here to-day?

A. Yes, sir.

Q. 99. You have come here and told what you know about the process?

A. Yes, sir.

Q. 100. Have you any interest in this suit?

A. No, sir.

Recross:

Q. 101. What is your present business?

A. Lumbering, milling, and farming.

Q. 102. Have you any transactions with the Standard Oil Company?

A. No, sir.

Q. 103. How much of the time were you away from your factory on an average?

A. Could not say; it depended on the roads and weather; it might have been half the time; it might have been more; could not say as to that.

Q. 104. Did you make a great many barrels that were not lined by this process?

A. We sold some of our barrels that way.

Q. 105. About what proportion?

A. I could not remember.

Q. 106. State as near as you can.

372 A. There might have been a fourth of them.

Q. 107. You have stated that you have had a personal knowledge of Mr. Sargent the last three years.

—. ——.

Q. 108. What has that knowledge been?

A. He has frequently been at my house. He has stayed over night. He represents a paper in Titusville—a party paper. He is a party friend.

WARREN W. GREEN.

Sworn to before me this 29th day of November, 1887.

HENRY A. CLARK,
Special Examiner and Notary Public.

373 United States Circuit Court, Southern District of New York.
In Equity.

EDWARD W. LEGGETT
vs.
STANDARD OIL COMPANY.

Testimony in behalf of the defendant, taken pursuant to notice, before Edward M. Guthrie, Esq., an examiner specially appointed therefor, to be used on the hearing of the above-entitled suit.

TITUSVILLE, PENNSYLVANIA, *December* 12, 1887.

Present: Edwin M. Felt, Esq., counsel for complainant, and William S. Beaman, counsel for defendant.

WILLIAM H. ABBOTT, being duly sworn as a witness in behalf of the defendant, deposes and says:

Q. 1. What is your name, age, residence, and occupation?

A. My name is William H. Abbott; my age, 68 years; residence, Titusville, Pa.; occupation, oil business mainly for last 27 years.

Q. 2. Where did you reside before you came to Titusville?

A. Newton Falls, Trumbull county, Ohio.

Q. 3. How long had you resided at Newton Falls, and in what business were you engaged?

374 A. I was engaged in the general mercantile business. I went to Newton Falls on May 14, 1844. I remained there permanently in this business until I came to Titusville, February 8, 1860.

Q. 4. When and how did you first commence the oil business?

A. My first purchase was from William Barnsdall, February 9, 1860, of an interest in the Parker farm and several other interests in this vicinity. At the time I made this purchase William Barnsdall was putting down a well on the Parker farm which was completed about six days after, and was a 50-barrel well.

Q. 5. What did you next do after making this purchase?

A. We wanted barrels in which to transport the oil to New York. We were buying a common wood-hoop barrel in Titusville of Bas-

sett & Co. for $1.65 apiece. We sent some of those barrels to New York and found they leaked from a quarter to a half of the oil. Then I went to Bassett to have him make some iron-bound barrels and told him of our experience with the others. He said they would cost too much. I told him that as far as that was concerned it would not matter. I tried to prevail on him to make them. I told him I had dealings with ironmen at Youngstown, Ohio—Brown, Bunnell & Co., and others—by which I could give him all the iron he wanted, and I would advance to him a reasonable amount for labor and staves, if necessary, and take it all back in barrels. I couldn't prevail on him to enter into such an arrangement. I then went to Newton Falls, Ohio. This was all in 1860. I gave directions there to some coopers who had been manufacturing beef barrels and butter firkins for me for over fifteen years (his name was John Sweeney) to make me 200 barrels for crude oil, which he did. They averaged about 41 gallons apiece. When they were completed I took some tanners' scraps, rawhide, put them into a large iron
375 kettle, holding about a barrel, which kettle I had used at Newton Falls for rendering lard and tallow. I put water in with the scraps and boiled it, testing it from — to time on new staves not made into barrels. When I got it to a consistency which I considered pretty good glue, I put about three gallons of the liquid, boiling hot, into the barrels and rinsed it about to cover the whole inner surface with this preparation; that's all there was to that. I wagoned them across the country 88 miles to Titusville. I then put the barrels into immediate crude-oil service between here and New York. We filled the barrels here and shipped them to New York, where they were emptied and returned to Titusville. Those barrels made 13 round trips between here and New York. I then filled them with crude oil and sold them with the oil. I don't remember the exact parties to whom I sold them. I was dealing largely with Schieffelin & Co., J. G. Williams, all of New York.

Q. 4. Did you sell out your mercantile business at Newton Falls before coming here?

A. I did not. I wound it up in the latter part of 1861, and then took my family to Cleveland.

Q. 5. Where was your place of business at Newton Falls?

A. In the centre of the village.

Q. 6. How near to your store was John Sweeney's shop?

A. About 50 rods; not more than that.

Q. 7. Do you know whether Sweeney is now alive?

A. I do not; I have not been to Newton Falls for 15 or 16 years, and he had left previously; I do not know where he is.

Q. 8. Do you know where any one is that worked for him?

A. I do not.

Q. 9. Who kept the tannery where you purchased these scraps?

376 A. Thos. Gaskill; he had been a tanner before I went there; he was there when I left; he subsequently went to some Western State; I think Wisconsin.

Q. 10. Do you know where any one is who worked for Gaskill at that time?

A. I don't think I can state positively; I don't recollect the names of any of them.

Q. 11. Do you remember the time of year when you bought the scraps of Gaskill?

A. I got the barrels here in June, 1860; it must have been about the middle of May when I bought the scraps from Gaskill; I painted the barrels myself with chocolate-colored mineral paint and linseed oil; the paint was mixed at Akron, Ohio, and I called it Ohio mud.

Q. 12. Where was this large iron kettle in which you boiled those scraps?

A. In the rear of my store in a little building which I erected for the purpose of trying out lard and tallow.

Q. 13. Where was the fire?

A. The kettle sat in a brick arch under which was the fire.

Q. 14. Do you remember whether you personally boiled those scraps?

A. I do, distinctly; I did it myself.

Q. 15. How many scraps did you put in the kettle at a time?

A. My recollection is that I put in about a bushel at first and then added scraps or water from time to time until I got the proper consistency.

Q. 16. What was the consistency which you thought proper?

A. A fair quality of glue in body and every other way; that is what I was trying to arrive at.

Q. 17. Do you remember how long you boiled the scraps?

A. The first of the boiling, as I recollect, was a good por-
377 tion of the day; I should say from 8 to 10 hours; I added more scraps and more water until I got through.

Q. 18. Did you use all the material in the kettle at one time?

A. Don't think I did; not at first at any rate; what was in the kettle would go a good ways, and the excess of the solution needed for the barrel was poured back into the kettle.

Q. 19. Do you remember how long you were in lining these 200 barrels?

A. I should say about ten days or more; we lined them as they were brought to us from the cooper shop; I know the time seemed long to me, for I was waiting for them.

Q. 20. The liquid that remained in the kettle became cool sometimes, did it not?

A. Yes; whenever the fire went down; it became like gelatine; when we wanted to use this we warmed it over again.

Q. 21. When you put the material into the barrel did you bung up the barrel?

A. I drove the bung right in and swashed the liquid around so as to cover the whole inner surface of the barrel.

Q. 22. Did this process serve to show any pin or worm holes that might be in the barrel?

A. It would; a pressure was created to such an extent in the bar-

rel that if the bung was struck out it would fly up in the air twice as high as the ceiling of this room.

Q. 23. Who assisted you in lining these barrels?

A. I don't recollect that I had any assistance.

Q. 24. Were these 200 barrels brought to Titusville at the same time?

A. They were not; some of the teams made two trips; it was 88 miles across the country.

Q. 25. Where were they taken when they arrived here?

A. To my warehouse, down in the flats, and were sent immediately to the wells; most, if not all, were filled at the Barnsdall well.

378 Q. 26. Did you ever have any trouble with those barrels?

A. Sometimes a chime would break or the barrel would require a new stave.

Q. 27. Did you have any trouble with the linings?

A. We did not. The barrels went through without leaking.

Q. 28. How were they shipped from here to New York?

A. Those 200 barrels were wagoned to Union Mills, 22 miles, and then by rail to New York.

Q. 29. Can you name any party who knows anything about those barrels which you lined?

A. Wm. Barnsdall, of Titusville, I think remembers about them; also Zed Martin, proprietor of the Brunswick hotel, of this city; also James Parker, of Cleveland, Ohio, who owned the Parker farm, in which we had an interest. The Barnsdall well was located on this farm. Mr. J. J. Hirst, who is now 84 or 85 years old, drew some of those barrels for us from here to Union Mills. I think these men, or some of them, will remember about those barrels.

Q. 30. Have you any books or papers showing your business transactions at that time?

A. I think I have. I have a great quantity of books. I haven't examined any of them of late, but have no doubt but that I can find records of these transactions among them.

Q. 31. How extensively have you been engaged in the oil business here?

A. My first purchase was of a $10,000 interest, which I bought from Wm. Barnsdall. It grew from that time until 1864. I had transactions running as high as $260,000 in one day. I had an interest in the Noble well which netted me $2,500 a day. I was interested in the second well that was drilled here. I built the first refinery on Oil creek. These 200 barrels referred to were the

379 first iron-bound barrels that were made exclusively for crude oil. I built the first warehouse at Union Mills for handling and shipping crude oil. I built two 600-barrel tanks at Corry, the first that were built there for the transfer of oil. I cut down the trees and pulled out the stumps to make a foundation for those tanks and the building. I secured the first 10 covered cars for shipping oil.

Q. 32. If so desired by counsel, will you ascertain if you have any books relating to those 200 barrels?

A. I am inclined to think I can find some.

Cross-examined by Mr. FELT:

X Q. 1. What kind of scraps did you buy at this tannery?

A. Rawhides, trimmings of hides commonly called tanner's scraps.

X Q. 2. Did you buy them all at once or at different times?

A. At different times; two or three different times. I bought until I got enough.

X Q. 3. What did you do with the scraps before you put them in the kettle?

A. Nothing; simply put them in the kettle and put water on them and boiled them.

X Q. 4. Did you add anything after you put them in the kettle and poured water on them?

A. I did not.

X Q. 5. What experience, if any, have you ever had in the manufacture of glue?

A. I have never had any experience in the manufacture of glue, but have bought and sold a good deal of it.

X Q. 6. Who first spoke to you about being a witness in this case.

A. Ransom H. Sargent.

X Q. 7. Can you tell how many scraps you bought from this tannery?

A. It may have been as much as three bushels. Whatever I used I got at this tannery.

X Q. 8. What is your business now?

380 A. I am slightly interested in the production of oil; have an interest in half a dozen mills at Allentown, N. Y.; am employing my hands in partially keeping the accounts of the Acme Oil Co.

X Q. 9. Then you are employed by the Acme Oil Co.?

A. I am.

X Q. 10. What is the relation of the Acme Oil Co. to the Standard oil?

A. Cannot tell.

X Q. 11. There is a connection, is there not?

(Counsel for defendant requests the counsel for complainant to state what corporation he means by the Standard Oil Co. and what he means by the word "connection.")

Mr. FELT: By The Standard Oil Co. I mean the defendant in this action; by connection I mean a business connection.

A. I am led to believe——

(Counsel for defendant requests witness to state what he knows and not what he believes.)

(Counsel for the complainant protests and objects on record to the interference and interruption of the witness by the counsel of the

defendant and insists upon the witness answering the question in his own way.)

(Counsel for defendant informs the witness that although The Standard Oil Co. of Ohio, a corporation organized and existing under the laws of Ohio, is the sole defendant in this action, the counsel for complainant wishes to ascertain from the witness what is the connection of the Acme Oil Co. with any corporation known as the Standard Oil Co. Counsel for defendant instructs the witness to answer the question as far as it relates to The Standard Oil Co. of Ohio, the defendant in this suit.)

A. I don't know any more about the Standard Oil Co. of Ohio than I do of the Standard Oil Co. of New York. Mr. Archbold is interested in the Acme Oil Co. and also in the Standard Oil Co.; this is all I know about it.

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X Q. 12. The oil taken from the wells which you say you have an interest in, do you sell as crude or refined oil?

A. As crude oil.

X Q. 13. To whom do you sell your crude oil?

A. The Tidewater Pipe Co.

X Q. 14. Is or is not the Tidewater Pipe Co. a branch of the Standard Oil Co.?

Defendant's counsel objects to the complainant's counsel's use of the name "Standard Oil Co." in the last question unless he therein refers to The Standard Oil Co. of Ohio, the defendant in this suit, as the counsel for complainant knows perfectly well that there are Standard Oil Co's in other States, and if he refers to any other corporation than the Ohio corporation the question is wholly irrelevant and immaterial.

A. I am not able to answer that; I only know what common reports are.

Redirect by Mr. BEAMAN:

R. D. Q. 1. You state that you have heretofore bought and used a good deal of glue. For what purpose did you buy it?

A. Mostly for preparing refined-oil barrels.

R. D. Q. 2. You lined these barrels with melted glue?

A. Yes.

R. D. Q. 3. You never used any of the liquid made by boiling scraps except for lining the 200 barrels as to which you have testified?

A. That is the only time.

Q. 4. When did Mr. Sargent speak to you about this matter?

A. Last Tuesday night.

Q. 5. What was the substance of that interview?

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A. The substance was the same as I have given. He asked me what I had done heretofore about preparing oil barrels. I told him in a general way.

Q. 6. How long have you been in the employ of the Acme Oil Company?

A. A little over a year.

Q. 7. What is Mr. Archbold's full name, of whom you have spoken?

A. John D. Archbold.

Q. 8. What Standard Oil Company is he interested in?

A. I have no knowledge of but one Standard Oil Company.

Q. Where is that company?

A. Its office is at 26 Broadway, New York city.

Q. 10. Is its principal office in New York?

A. I suppose it is. I haven't been there since it was built.

Q. 11. Is Mr. Archbold in any way interested in the Standard Oil Company of Ohio, to your knowledge?

A. I don't know anything about the Ohio company any more than I do of the New York company.

Q. 12. In which company is Mr. Archbold interested?

A. I don't know.

Q. 13. How long have you known Mr. Ransom H. Sargent?

A. More than 20 years.

Q. 14. Have you any interest in this suit?

A. None whatever.

Recross-examination:

Q. 1. What is your position in the Acme Oil Company?

A. I am keeping partial accounts for them.

W. H. ABBOTT.

The taking of further testimony in this case is continued until Tuesday morning, December 13, 1887, at 10 o'clock.

383 And now, December 13, 1887, the taking of further testimony in this case is proceeded with.

Present: Counsel as before.

ZADOCK MARTIN, being duly sworn according to law, deposes and says:

Q. 1. What is your name, age, residence, and occupation?

A. My name is Zadock Martin; my age, 64 years; residence, Titusville; occupation, proprietor of the Hotel Brunswick, in this city?

Q. 2. In what occupations were you engaged in the years 1860 and 1861?

A. I was superintendent for Barnsdall, Meade & Rouse, on the Parker farm. I was superintending the putting down of oil wells and the shipping of oil.

Q. 3. Crude oil?

A. Yes, sir.

Q. 4. Where did you ship it to?

A. To New York city, to Schieffelin & Co., and also to other parties and places.

Q. 5. When did you first take the position of superintendent at the Parker farm?

A. Nineteenth of March, 1860.

Q. 6. How long did you remain there?

A. I remained there until the beginning of March, 1861.

Q. 7. Do you know Wm. H. Abbott, of this city?

A. Yes, sir; I have known him since I came here.

Q. 8. Was he interested in any way in these wells on the Parker farm?

A. He was. I understood that he owned an eighth interest in the lease of Barnsdall, Meade & Rouse.

Q. 9. When you first went to the Parker farm in what kind of barrels was the crude oil shipped?

384 A. It was shipped in wood-hooped barrels, similar to pork barrels. There was a great deal of leakage in those barrels. Sometimes we had to refill them, because the gauge was marked on the barrels.

Q. 10. Did you continue the use of those wood-hooped barrels? If not, state what other barrels you used, if any.

A. We had other barrels with iron hoops, which were shipped to us by Mr. Abbott. Mr. Abbott was the moving spirit down there. He had all the powder in him that there was there. Mr. Barnsdall was there every day, but the other partners did not come there very often.

Q. 11. Do you remember any particular barrels that were used by you for shipping crude oil at the Parker farm in 1860?

A. Certainly I do. I remember the iron-hoop barrels Mr. Abbott sent to me. I filled them with oil and shipped them to New York, and they were returned several times. I can't tell how many times.

Q. 12. Do you remember how many of these barrels there were?

A. I can't distinctly say, but, speaking within bounds, I should say there were from 90 to 100 of them.

Q. 13. Did you have any trouble with those barrels on account of leakage?

A. I don't know that I had. When they were returned I would have my man drive down the hoops on them. Sometimes they were gone two or three weeks.

Q. 14. Did you ever examine the inside of any of these barrels?

A. I can't remember that I ever did.

Q. 15. Do you know where they came from?

A. I know that some came from Dunkirk, N. Y., and some from Ohio.

Q. 16. How long after this did you continue in the oil business?

A. Till January, 1863.

385 Q. 17. What is Mr. Abbott's general reputation here for truth and veracity?

A. Very good, indeed.

Q. 18. Has he been prominent in the oil business in Titusville?

A. He was in his early days.

Q. 19. Have you any interest in this suit?

A. No, sir.

Cross-examined by Mr. FELT:

Q. 1. You had other iron-hooped barrels besides those Mr. Abbott sent you, had you not?

A. Yes, sir.

Q. 2. And before you received those from Mr. Abbott?

A. No, sir; those were the first that we had, and were the first iron-hooped barrels ever shipped out of Titusville.

ZADOCK MARTIN.

Mr. ABBOTT recalled and examined by Mr. BEAMAN:

Q. 1. You were asked yesterday about your books of account for the year 1860. State where those books are, if you know.

A. When I was at Newton Falls, Ohio, about 15 years ago, they were then stored away in a warehouse and carriage-house. I don't know where they are now. I have sold that property since. It has changed hands several times since.

WM. H. ABBOTT.

Mr. RANSOM H. SARGENT examined by Mr. BEAMAN:

Q. 1. You have heretofore testified in this suit in behalf of the defendant?

A. Yes, sir.

Q. 2 Have you since the time of giving your deposition ascertained, at the request of the defendant, whether or not the members of the firm of Kennedy & Gagan, of Erie, Penn., are alive?

386 A. They are dead.

Q. 3. Have you made a similar search as to one Jacob Carl, formerly of Erie?

A. I have, and learned that he went to Canada, where he died.

Q. 4. Have you made a similar search as to one Patterson, formerly of Richmond township, Penn.?

A. I have. I learned from his family that he had left the country and they did not know where he went to.

Q. 5 Do you know W. W. Green, of Richmond township, Penn., who testified for the defendant in this suit?

A. I do.

Q. 6. Did you request him to attend and give his testimony?

A. I did.

Q. 7. Did you, at the request of the defendant, endeavor to find any of the persons who worked in said Green's cooper shop in Richmond township during the years mentioned in his testimony?

A. I have, but have not been able to find any one who worked for him.

Q. 8. Have you resided in Crawford county, Penn., all your life?

A. With the exception of five years, while I was at Petroleum Center.

Q. 9. State to what extent you are acquainted with the men who were interested in the oil business prior to 1872.

A. I was acquainted personally and by reputation with all up to that time.

Q. 10. Have you, at the request of this defendant, endeavored to communicate with any of these parties with reference to the subject-matter of this suit?

A. I have communicated with, or attempted to, with a good many.

Q. 11. You find that some of them are dead?

A. Some are dead; some are living in California, Arkansas, and other parts of the country.

387 Cross-examined by Mr. FELT:

X Q. 1. You have been employed by the defendant, have you not, in making the enquiries and performing services in this suit above testified to by you?

A. I was requested to interview and look up the early oil business men with the view of getting information. There is no special employment, but I expect to get paid for my time and services.

Q. 2. When did that service commence?

A. I have been engaged in looking after this business since about last election day in November.

Q. 3. Have you received anything in the way of compensation up to this time; if so, what?

A. Nothing since my services commenced; not even traveling expenses.

Q. 4. You were in the employ of the Standard Oil Co. in former years, were you not?

Defendant's counsel objects to the question as immaterial and irrelevant and as in nowise proper cross-examination.

A. I never was employed by them for any purpose at any time.

Q. 5. Have you, during former years, been employed by or been in the service of any company or corporation styling themselves the Standard Oil Co.?

Defendant's counsel makes the same objection and instructs the witness not to answer unless he wishes to.

A. Not directly or indirectly or in any shape or manner.

Redirect by Mr. BEAMAN:

Q. 1. Who requested you to make the examination which you say you have made?

A. By you, principally, and by Mr. T. H. Wheeler, of New York.

RANSOM H. SARGENT.

388 *Testimony of Henry D. Cone for Defendant.*

N. Y., *March* 27, 1888.

Present: William S. Beaman, Esq., counsel for defendant, and E. M. Felt, Esq., and Samuel C. Reed, Esq., counsel for complainant.

HENRY D. CONE, a witness of lawful age, produced on the part of the defendant, having been by me first duly cautioned and
389 sworn to testify the truth, the whole truth, and nothing but the truth in the matter of controversy herein, and being examined by Mr. BEAMAN, counsel for the defendant, deposes and says as follows:

Q. 1. What is your name, age, residence, and occupation?

A. My name is Henry D. Cone; I am 52 years old; I reside at Stockbridge, Mass.; I am a manufacturer of paper.

Q. 2. Where is your paper factory?

A. My mills are at Housatonic Village, Great Barrington, Berkshire county, Mass.

Q. 3. How long have you been in the business of manufacturing paper?

A. I have been connected with the business since 1856. From 1861 I have been owner.

Q. 4. In the manufacture of paper at your factory you have been accustomed to use what is generally known as size or sizing, have you not?

A. Yes, sir.

Q. 5. During all the time?

A. Yes, sir.

Q. 6. How have you obtained this size?

A. We usually have bought the pieces of hides and made the sizing from the hides by boiling them in water. Sometimes we have bought glue and dissolved the glue in water.

Q. 7. From whom have you been accustomed to purchase these hide pieces of which you speak?

A. We have bought them of great many parties. They are an article of commerce. Sometimes we have bought manil-a hide cuttings; sometimes hides that have come from South America; other times scraps of hides that have come from domestic tanneries; sometimes we bought horn-pith sizing from our friend here, Mr. Leggett; and sometimes we bought scraps of rabbit skins, coney skins—the fur is cut off and the skin cut up into shreds looking very much like vermicelli.

Q. 8. How much of this stock have you generally been accustomed to carry?

390 A. We sometimes have had fifty tons on hand; oftener have had less.

Q. 9. When you desired to make size from these hide pieces, what did you do? Please state fully.

A. Just the process that we employed depended upon the quality and kinds of pieces. Manil-a hide cuttings we would soak in cold water two or three days; then we would wash off any lime or extraneous substances that might be on the outside; then we put them into a tub or boiling receptacle of some kind, which had coils of pipe at the bottom, and melt out the sizing.

Q. 9½. How long did you boil these pieces, ordinarily?

A. That depends somewhat on the kind of pieces. If they are

cut into small pieces the sizing boils out sooner than if the hides are in large pieces. For the smaller pieces, we would melt what we term the first drawing out in from 12 to 24 hours. We draw off that sizing, put in more water, and melt out the balance of the sizing from the pieces.

Q. 10. What do you then do with the sizing after it has been taken from the kettle?

A. We use it in the sizing vat upon our machine, running the rolls of paper through into the vat, so as to saturate the sheets with the sizing, to make the paper impervious to water or ink. The ink will strike into it and not spread. I mean so that it would not strike through it.

Q. 10½. When the hide pieces are in the kettle do you add anything to them?

A. We add water to them. Sometimes we have added alum.

Q. 11. Have you always added alum?

A. We almost invariably have added alum after the sizing has been drawn off into the tubs. We have used it without, but almost invariably add alum to the sizing after it is drawn off for use.

Q. 12. Why have you added alum after it has been drawn off?

391 A. One purpose of the alum is to preserve the sizing from decomposition, which, in summer time, is liable to take place; and another reason is that we consider that the alum makes the sizing harder or gives better results in the paper.

Q. 13. In the questions heretofore given to you and in subsequent questions I desire that you should bear in mind that I am inquiring as to what you did prior to 1871. Do your answers as heretofore given by you apply to your action as a paper manufacturer prior to 1871?

A. Yes; with the exception as to the kinds of sizing which I stated we had used. Prior to 1871 we had not bought any hornpith sizing from our friend Mr. Leggett, or any of the shredded coney or rabbit skin stock.

Q. 14. Was the sizing when the paper was passed through it warm?

A. Yes.

Q. 15. Was it warmed after it was drawn from the kettle, or heated in any way?

A. Frequently we used it from the kettle before it had cooled, but generally in practice it has been cooled, and then rewarmed before it was put into the vat for use in the paper.

Q. 16. When you allowed it to cool did you allow it to cool in the boiling kettle?

A. No; we drew it off into other vessels.

Q. 17. Drew it off while it was hot?

A. Yes.

Q. 18. Have you ever made any size from anything else than from these hide scraps of which you have spoken?

A. We have occasionally bought the glue of the glue manufacturers and dissolved the glue into liquid sizing.

Q. 19. What did you do to it after melting the glue?

392 A. We didn't do anything to it usually. Sometimes we added a little more alum after we had melted the glue, and sometimes we didn't.

Q. 20. Just as in the case of the boiling from the hide scraps?

A. No; not just as in that case; because in using the hide scraps we almost invariably, but not always, put in alum, and in the case of glue we seldom put in alum after melting.

Q. 21. In the case of the melted glue was the alum put into the kettle or into the trough through which the paper web was run?

A. It was put into the liquid glue after it was dissolved.

Q. 22. You used this size from melted glue prior to 1871?

A. Yes, sir.

Q. 23. And you have used the size from melted glue since 1871 also?

A. Yes.

Q. 24. Why did you buy the dry glue and melt it to make size instead of making the size from the hide scraps?

A. As near as I can recollect, in one or two instances some manufacturers of glue came to us and wished to convince us that it was more economical to buy the glue than it was to buy the pieces and make our own size, and we made the experiment and melted the dry glue and used it in our paper.

Q. 25. Do not glue manufacturers, to your knowledge, make and sell what they call size?

A. Several glue manufacturers have come to us with samples of what they called size and tried to sell it to us. I can't say how they came by it.

Q. 26. Have you ever bought any size from them?

A. Any of this prepared liquid sizing? No.

Q. 27. Do you know the complainant in this suit, Mr. Edward W. Leggett?

A. Yes, sir.

Q. 28. How long have you known him?

393 A. I can't state definitely; I should think six to eight years; that is my impression; I can't carry the dates.

Q. 29. Has he called upon you to sell you size to use in your business of paper manufacturing?

A. Yes.

Q. 30. But you never bought any size from him?

A. I never have bought any of the prepared liquid size from him; I have bought his horn-pith sizing.

Q. 31. What is his horn-pith sizing?

A. It is the pith from horns of cattle.

Q. 32. Is it a liquid?

A. No; dry, bony stuff.

Q. 33. In what shape is it put up for sale—what packages?

A. It is put up in bags.

Q. 34. How is it intended to be used by paper manufacturers?

A. We use it in a similar manner to the pieces of hide.

Q. 35. You put it in a kettle and boiled it?

A. We put it into a kettle and melted the sizing out. We don't bring it to a boiling point, though sometimes we do, but it is not our practice.

By Mr. C. C. BEAMAN:

Q. 36. This process of making size that you have described and the use of it in your business was practiced by you, as I understand, prior to 1871?

A. Yes, sir.

Q. 37. Do you know of substantially the same practice by other paper manufacturers prior to that date?

A. I know of my own personal knowledge of its having been used by others from 1856; by Owen & Hurlbut, of South Lee, Mass.; Platner & Smith, of Lee, Mass.; Benton & Garfield, of Lee, Mass.

394 Q. 38. Used by all these people prior to 1871?

A. Yes.

Q. 39. You have spoken of the size as liquid size. Do you mean that it was liquid at the ordinary temperature of the air?

A. That would depend upon the temperature of the air.

Q. 40. At what temperature would it be liquid?

A. The sizing that we used in our paper would be liquid in a warm summer temperature; I think it would be liquid in this room; at 70° to 75°; it would be a jelly, I should say, as a matter of opinion, at 40°, and whether it be liquid or jellied at a higher or lower temperature depends, in a measure, upon the strength of the sizing, the strength of the solution.

Q. 41. About what was the proportion of water and glue in the sizing as you ordinarily made it?

A. 1,500 pounds of some kinds of scrap would produce 1,500 gallons of a sizing of a consistency suitable for our work, while the same quantity of scraps of different qualities would produce less or more than 1,500 gallons.

Q. 42. When it was too thin what would you do to it?

A. In making in practice we draw what we term a first boiling, which is usually the strongest; then we add more water and melt out the second drawing, which sometimes is the last and not as strong as the first drawing; then we sometimes add more water and take off another drawing, which is usually not strong enough to use alone; we mix these three drawing-going and coming; if we find it is too weak we add some from the first drawing; or if it is too heavy we may add water or we may add some from the third drawing.

Q. 43. Did you ever make any of the sizing stronger or heavier by evaporation or more boiling?

A. Yes; we sometimes boil it so strong that it jellies and we cut it up into slices and dry it on racks for glue, which we have
395 more or less used about the mill in glueing up joiner-work and for use where we want a very strong tenacious paste or sticking substance.

Q. 44. Do you sometimes use this hard glue that you have made by adding water and heating it up again and making a size of it for paper purposes?

A. No; we have never used any of this home-made glue for paper.

Q. 45. What kind of paper do you make in your factory?

A. We make a large variety of letter and note paper, some bond paper, some ledger paper for ledgers. All the paper we make is used for writing paper. It is all made with this size. Such papers we have been making since 1861 in our present mill.

Q. 46. At what stage of the process of paper-making is it sized, as it is called?

A. Animal sizing, or what we term sizing in a tub or vat, is done after the paper has been formed on the machine and the water dried out of it by passing the continuous web from the machine through a vat containing the liquid sizing, and then passing between two rolls to squeeze out the surplus sizing.

Q 47. At what temperature is the size so applied?

A. I can't tell you the temperature by the thermometer. It is a little too hot to put your hand in—about 130° to 135°.

Cross-examination by Mr. FELT, counsel for complainant:

X Q. 48. Where you boil down hide pieces what proportion of hide pieces to water did you usually put in your kettle?

A. We usually calculated that a gallon of sizing as we used it is a fair yield to the pound of hide pieces. Some qualities of pieces make more and some less.

396 X Q. 49. Where the sizing is allowed to cool or become cold what is its consistency after boiling?

A. That depends upon the temperature which it is in. It usually is a stiff jelly that will—if we cut down one-half of the tub, the other half will stand up alone.

X Q. 50. How long usually did you boil your hide pieces?

A. That depends somewhat upon the kind of hide pieces. Usually from 12 to 24 hours.

X Q. 51. Do you know how much glue a gallon of your size contained?

A. I can't answer that specifically.

X Q. 52. Have you had any other experience in glue manufacture than what you have gained by making size, as you have testified?

A. No.

X Q. 53. Did you not in making size as a general thing use prepared stock?

A. No.

X Q. 54. You used all kinds, as you have stated?

A. Yes.

X Q. 55. This prepared stock that you used, what was its condition when you received it; had it been limed?

A. We have used pieces that have been limed and we have used pieces that had not been limed.

X Q. 56. Did you treat them both alike?

A. We sometimes used lime with those that had not been limed, and sometimes we used a small quantity of lime with those that had been limed.

X Q. 57. Did you invariably wash out this lime before boiling?

A. We intended to.

H'Y D. CONE.

Sworn to before me—

JOSEPH GUTMAN, JR., *Examiner.*

396a *Testimony of James G. Newcomb, for Defendant.*

United States Circuit Court, Southern District of New York. In Equity.

EDWARD W. LEGGETT
vs.
STANDARD OIL COMPANY.

Testimony taken on behalf of defendant before Joseph Gutman, Jr., Esq., United States commissioner, at New York, March 31, 1888, at 2 o'clock p. m.

Present: C. C. Beaman, Esq., for defendant; Edwin M. Felt, Esq., and Samuel C. Reed, Esq., for complainant.

JAMES G. NEWCOMB, being duly sworn and examined, testified as follows:

Q. 1. What is your name, age, residence, and occupation?

A. James G. Newcomb.

Q. 2. Your residence?

A. New York.

Q. 3. Your age?

A. Thirty-eight years.

Q. 4. Your occupation?

A. Assistant to Mr. Hopper in the barrel-preparing department of the Standard Oil Company.

Q. 5. Where are the works situated in which you are engaged?

A. New York and Philadelphia.

Q. 6. What part of New York?

397 A. Over on the Brooklyn side, at Williamsburg and Greenpoint, and in New Jersey down at Bayonne and Constable Hook.

Q. 7. At Philadelphia?

A. At Philadelphia, at Point Breeze.

Q. 8. What companies are in charge of those several works; the Standard Oil Company?

A. Yes, sir.

Q. 9. That is at New York?

A. Yes, sir.

Q. 10. And the Standard Oil Company of New York and the Standard Oil Company of New Jersey?

A. Yes, sir.

Q. 11. At Philadelphia?

A. The Atlantic Refining Company.

Q. 12. Were you ever employed by The Standard Oil Company of Ohio, the defendant in this suit?

A. Yes, sir.

Q. 13. Whereabouts?

A. Cleveland.

Q. 14. What was your work there?

A. The same.

Q. 15. When did you begin working for them at Cleveland, and when did you give up working there?

A. 1872 I commenced work, and came East in 1877.

Q. 16. Have you since 1877 been in the employ of these other parties of whom you have spoken?

A. Yes, sir.

Q. 17. Beginning with 1872 to the present time, what have you had to do with the lining of oil barrels with a coating of glue?

A. Seeing that the proper amount of glue was used at the different points there in Cleveland; different works, you know; seeing that it was kept at its proper temperature and that the work was done properly.

398 Q. 18. Has it been since 1871 a part of your business to see that the oil barrels were properly glued?

A. Yes, sir.

Q. 19. What was the process in use at the Cleveland works in 1872?

A. In 1872 it was to put the dry glue in the kettles and soak it and heat it up with a certain amount of water to a temperature of the proper—of the consistency for the season of the work that was to be done. At different seasons there were different temperatures.

Q. 20. Then what was done with the glue?

A. The barrels came down a runway alongside the glue kettles and a funnel was placed in the bung-hole and about a gallon to a gallon and a half of glue was poured into the barrel and the barrel was bunged up and shaken, to create a pressure inside the barrel to test the barrel and also to spread the coating over the inside of the barrel.

Q. 21. Has this process of gluing barrels been continued from that time since?

A. The same; no change in the process as far as gluing the barrels.

Q. 22. In the beginning of 1872 did you buy your own glue—that is, the Standard Company?

A. Yes, sir.

Q. 23. How long did you continue to buy your own glue there?

A. Well, I don't know just what year the glue factory was started there, but I think about 1874.

Q. 24. After that time did the company make its own glue?

A. Yes, sir.

Q. 25. In Cleveland?

A. Yes, sir.

Q. 26. So long as you were there?

A. Yes, sir.

Q. 27. After the company began making its own glue, in '74, how did the process differ from the former process?

399 A. We would tell Mr. Plumer how many barrels we were going to glue and what consistency we wanted to glue the next day, and he would make a boiling so as to give us just that quantity, and instead of soaking the glue as we had formerly been doing we would pump it in that liquid state right into our kettles.

Q. 28. Your glue kettles?

A. Yes; all ready to use except the temperature.

Q. 29. The same kettles?

A. The same; no change at all in the apparatus.

Q. 30. From that time on everything was exactly as done before?

A. The same; yes, sir.

Q. 31. I mean from the time the glue was in the kettle and tempered.

A. The process was exactly the same; yes, sir.

Q. 32. Did that process continue so long as you were in Cleveland?

A. Yes, sir.

Q. 33. After you came East and began work here what process did you use?

A. We did the same except using dry glue; we had dry glue. No difference in quantities or temperatures.

Q. 34. You bought your glue instead of making it yourselves?

A. Yes, sir.

Q. 35. How long did you continue making your own glue or buying your glue?

A. Until about 1886.

Q. 36. From 1877, when you came here?

A. Yes, sir.

Q. 37. About how many barrels were you gluing per day here on the average with hard glue—the dry glue that you bought?

A. On the average probably——

Q. 38. At the different works?

A. Six to eight thousand barrels.

400 Q. 39. Are you at any of these factories which you have charge of—barrel factories—making your own glue?

A. Yes, sir.

Q. 40. Where?

A. At Bayonne.

Q. 41. Do you make your own glue there and then pump it over into your glue kettles substantially as you have described that you did at Cleveland?

A. We do not pump it for the reason that we have not yet got a

line laid out here, so we put it in barrels and roll it over to the glue kettles and dump it in.

Q. 42. You are now making your own glue at Bayonne, are you?

A. Yes, sir.

Q. 43. And from your glue factory there are you sending your glue or glue size in barrels to some of the other works?

A. Yes, sir.

Q. 44. In what shape do you send it in barrels?

A. In the liquid state.

Q. 45. Of what consistency does it become after it has cooled?

A. About three to one.

Q. 46. Three to one of glue?

A. Yes, sir.

Q. 47. Does that become jelly?

A. Oh, yes; if you leave it long enough.

Q. 48. Is the jelly sufficiently thick so you can slice it and make glue of it?

A. Yes, sir.

Q. 49. Were you accustomed in Cleveland and are you accustomed now at Bayonne to take samples of this glue or size and make it into dried glue?

A. Every day.

Q. 50. Every day; what for?

A. For testing the quality of it.

Q. 51. So it is all ready to be made into dried glue if you just slice it and dry it?

401 A. Yes.

Q. 52. That is all that is necessary to make it into dried glue?

A. Yes, sir; that is all.

Q. 53. In the course of your business for the last fifteen years has it been your habit and custom to examine a great many of these barrels?

A. Yes, sir.

Q. 54. What do you do?

A. I take the head out of the barrel and examine the inside to tell as near as I can as to whether the work is properly done, whether the barrel is well covered and whether the workmen have used the quantity of glue we desire.

Q. 55. You have spoken of the works at Philadelphia, the Atlantic Refining Company; are you in charge of these barrel works?

A. Yes, sir.

Q. 56. How do they glue their barrels there?

A. By using dry glue.

Q. 57. And buying the glue?

A. Yes; we buy the glue.

Q. 58. So far as you have had experience is there any difference whatever between the barrels that have been glued with glue that has been reduced to a liquid state from the dried glue or with glue that has been put into barrels never having been reduced to the dry state?

A. No, sir; no difference.

Q. 59. Can you tell any difference between the two barrels?

A. No, sir.

Q. 60. Is there any difference in appearance?

A. No, sir.

Q. 61. Or in the amount of glue that penetrates into the barrels?

A. No; there should not be.

Q. 62. Is there any difference in the way in which the barrel is lined so as to hold the oil?

A. Any difference?

402 Q. 63. Any difference between the dry glue and the liquid glue?

A. No, sir; no difference.

Q. 64. Is there any purpose that you know of or any advantage that you know of in the company making its own glue, except in the saving of the time and labor that would be spent in first drying it and then reducing it to the liquid state?

A. We save the time that it would take our men to do that and we also save the cost that there would be in drying the glue of the manufacturers and also the profit they might make.

Q. 65. That is, you save the profit by making your own glue?

A. Yes, sir.

Q. 66. By not drying it you save the profit of drying it?

A. Yes, sir.

Q. 67. Is there anything else?

A. We undoubtedly get a better article of glue than we would for the same money by buying dry glue.

Q. 68. You make a good quality of glue, which costs you less money than it would to buy dry glue?

A. Yes, sir.

Q. 69. Does the Standard Oil Company make its own barrels?

A. Yes, sir.

Q. 70. And saves money doing that?

A. It does.

Q. 71. Does it make its own paint?

A. Yes, sir.

Q. 72. And saves money in doing that?

A. Yes, sir.

Q. 73. Does it make its own solder and tin cans?

A. Yes, sir.

Q. 74. And saves money in doing that?

A. Yes, sir; and boxes.

403 Q. 75. In gluing barrels with glue what is the amount of glue—what is the proportion of glue and water in the solution that you pour into the barrels in the ordinary temperature as you practice it at Cleveland?

A. Well, an average would be about two and a half to one—two and a half of water and one of glue.

Q. 76. That is the proportion that you practiced in Cleveland in 1872?

A. Yes, sir.

Q. 77. And the general proportion you have practised since?

A. Yes, sir.

Q. 78. In pouring the glue into the barrels you pour in about a gallon to a barrel?

A. Yes; about a gallon to a gallon and a half.

Q. 79. How much will a barrel hold?

A. What is the capacity of the barrel?

Q. 80. Yes.

A. About fifty-two gallons.

Q. 81. After you have poured in the glue and bunged up the barrel you give it a little shake and then it is turned over to drain, is it not?

A. Yes, sir.

Q. 82. What proportion of the gallon or gallon and a half of liquid glue that you have put in runs out?

A. I should think that four-fifths of it would run out.

Q. 83. Does the gluing of the barrel do anything more—that is, do anything more than substantially to line the inside of the barrel with a coating of glue just the same as you would line the inside of a barrel with a coating of paint or with varnish if you put a gallon or more in the barrel and shook it around in the same way?

A. In the appearance, do you mean?

Q. 85. No; so far as covering it with a coating.

A. That is about all.

404 Q. 86. There is no distinct lining of glue or anything, so that it can be taken up and come off like a sheet of paper?

A. When we put in a heavy coating of glue you might do that.

Q. 87. It adheres to the sides of the barrel in the same way that a coating of varnish would or paint?

A. Yes. Take a barrel with a half a pound of glue in it, after it had set, and you could probably peel off quite a little.

Q. 87. Do you know anything about the number of square inches in the inside of one of these barrels?

A. No; I don't know that I do exactly.

Q. 88. Have you in your business for the last fifteen years had charge of or had to do with the gluing of as many as three or four thousand barrels on an average a day?

A. Yes; ten or fifteen thousand.

Q. 89. How many barrels in a day will a single operative glue? I mean a single man who takes a barrel after the glue has been put into it and shakes it and rolls it up on the skids to drain.

A. About twelve hundred.

Q. 90. In how many hours?

A. In ten hours.

Q. 91. About one hundred and twenty an hour or about two a minute—that is, in every thirty seconds he will take a barrel and give it a little shake and roll it over on the skids?

A. Yes, sir.

Q. 92. That is all the process of gluing is—just giving it a little shake?

A. Yes; that is all.

Cross-examination by Mr. FELT:

Q. 1. What was your business prior to going to Cleveland in '72?

A. Prior to going to work for the Standard Oil Company?

Q. 2. Yes.

405 A. I was with the Marsh & Harvard chemical works.

Q. 3. Had you ever had anything to do with glue or with gluing barrels before you went there?

A. No, sir.

Q. 4. When you went there in '72 please tell us what your duties were.

A. I went there as an assistant to Mr. Hopper in the barrel-preparing department.

Q. 5. What do you mean by barrel-preparing?

A. Well, the preparing of the barrel for receiving the oil—that is, coopering it and gluing it and painting it and filling and shipping. That is the whole department, you may say. Mr. Hopper and I attended to it all.

Q. 6. Who attended to the melting down of the glue and pouring it into the barrels?

A. The foreman in charge of the glue works, under our direction.

Q. 7. And after Mr. Plumer came there in '74, then what were your duties?

A. No change at all, except to let Mr. Plumer know how many barrels were going to be glued the next day and to tell him what consistency we wanted the glue.

Q. 8. After he came there did you have anything to do with the making of the glue or preparing it for pouring into the barrels?

A. No, sir; only to tell him what consistency we wanted.

Q. 9. So of precisely what he did and how he did it you have no knowledge, have you?

A. Well, I have knowledge.

Q. 10. Just tell us what you did know.

A. I knew that he took the stock out of the lime pits and put it in the washer and washed it and boiled it and then delivered us the liquid.

Q. 11. That was the general knowledge you had of what he was doing; but you had no special knowledge?

406 A. No, sir.

Q. 12. Your duties were principally confined to another department—that is, the putting of the glue into the barrels after it was made?

A. Yes, sir.

Q. 13. Is that correct?

A. Yes, sir.

Q. 14. Have you ever had any experience in the manufacture of glue except since your connection with the Standard Oil Company?

A. No, sir.

Q. 15. And that only as you have stated in preparing the glue for putting it into the barrels?

A. As connected with the Cleveland works; that is all.

Q. 16. Well, as connected with the works in New Jersey, New York, and Philadelphia that you have spoken of, what do you do—have to do—with the preparing of the glue there?

A. It is manufactured under my direction.

Q. 17. In which place; all of them?

A. Well, we have only one glue factory; that is at Bayonne.

Q. 18. If you pour a gallon of melted glue or liquid glue into a barrel for the purpose of lining it how much of it runs off after the operation is completed?

A. I think about four-fifths of it.

Q. 19. Then to glue a barrel takes about one-fifth of a gallon of glue?

A. I think so; yes, sir.

Q. 20. Does it make any difference in the lining whether the glue is strong or weak?

A. Well, we vary that part as to the season of the year. We do that by temperature.

Q. 21. My question was whether it makes any different kind of lining; whether the glue is strong or weak.

A. Oh, yes, sir; it does.

Q. 22. What difference?

A. Weak. Do you mean weak in gravity?

407 Q. 23. Strength.

A. Thin or heavy?

Q. 24. Strength.

A. Well, certainly I should think a strong glue was better than a weak glue.

Q. 25. Have you any means of knowing before you pour it into a barrel whether the glue is strong or weak?

A. We never have any glue in the kettle unless we know whether it is strong or weak.

Q. 26. How do you test its strength?

A. Test its strength in comparison. When we were using dry glue we had a standard, and any we purchased we tested to see how it would compare with the strong glue we kept as a standard.

Q. 27. How is it when you make your own glue?

A. With our own glue—we test that with a hydrometer. We make it a certain gravity.

Q. 28. Is there any particular gravity which you try to arrive at?

A. Yes, sir.

Q. 29. What is it?

A. When it is finished it is seven degrees. That is the strength we use as we use it now for the second coating. For the first coating it is about five and a half degrees.

Q. 30. Do you say that this apparatus that you used shows the strength of the glue?

A. Yes; that is what we claim it does with the stock we use. We know what stock we use, and when we make it the strength as shown by the hydrometer out of good stock we know what the strength is.

Q. 31. It is your opinion, is it not, that you get a better coating

for your barrels where you make your own glue than where you buy the dried glue and remelt it?

408 A. Where we take the dry glue that we had been using prior to making our own we feel that we get a better coating because the quality is better.

Q. 32. Is it your opinion that you get a purer glue, one freer from adulteration, by buying commercial glue and melting it down than where you make your own glue?

A. No; we feel that we get purer glue when we make our own glue.

Q. 33. Do you or do you not get a better lining?

A. Excuse me; I say that when we compare prices, you know; we will say that if we are buying glue at twelve or thirteen cents a pound we could make a glue ourselves for something near that figure that we would feel was far superior.

Q. 34. And you would get a better glue at a less cost?

A. Yes, sir.

Q. 35. Is it your experience, Mr. Newcomb, that that liquid glue which you make yourselves and apply to the inside of the barrels makes a more serviceable lining—that is, does it or does it not penetrate the pores of the barrel more?

A. No difference from the dry glue.

Q. 36. The same thing?

A. Yes, sir; the same thing; no noticeable difference.

Redirect examination by Mr. BEAMAN:

Q. 93. If a manufacturer of glue should use the same materials that you use for making glue and make dried glue from these materials, and then you should buy that dried glue of him and use it in your barrels, would you not get exactly the same result as you now get by glue without its first being dried?

A. Oh, yes; we would get the same result. When we dry that glue in making these tests the same glue melted up does the same work.

409 Q. 94. Then the reason that the glue you make yourselves is better in any respect than some dry glue that you buy is because it is made of better materials and is purer?

A. Yes; we probably would have to pay three or four or five cents a pound for that quality of glue more than we have been paying when we purchase dry glue.

Q. 95. All this comes from the fact that you make your own glue instead of buying it?

A. Yes, sir.

Q. 96. And you buy good materials?

A. We put no impurities in the glue; make it straight right from the start.

Q. 97. This advantage does not come at all from the fact that you use the glue before it is dried instead of using it after it is dried?

A. No, sir; there is nothing in that at all.

Q. 98. In making your own paint you get better paint than if you bought it at that price?

A. Yes, sir; we get a cheaper paint, considerably cheaper, than we could purchase it for in the market.

Q. 99. A better paint for the same money?

A. Yes, sir.

Q. 100. You have spoken about weak and strong glue. The strength of glue depends upon the material from which it is made, does it not?

A. Yes, sir.

Q. 101. And upon the amount of impurities in it?

A. Yes, sir.

Q. 102. And, assuming that you are always using good materials, you are certain of the strength if you have it of a given density?

A. Yes, sir; for lining barrels. We are not making furniture or anything of that kind; that is not the way we look for strength. You might say we look for the body.

Q. 103. You are not gluing or fastening anything together; you are simply putting on a coating?

A. Yes, sir; lining the inside of barrels.

410 Recross-examination by Mr. FELT:

Q. 37. Prior to '74 were you troubled with leakage of your barrels?

A. No, sir; not through any fault of the glue.

Q. 38. From any other cause?

A. We are now even. There is some trouble with timber or something of that kind that will cause trouble in leakage, but nothing in the glue at all.

By Mr. BEAMAN:

Q. 104. And the average leakages in the barrels are no less or no more now than they were in '72?

A. No, sir.

Q. 105. And they are no more at the Atlantic works, in Philadelphia, where you use dried glue, than at those other works where you use the liquid glue?

A. We all make reports and compare them, and if there was any more we would be after them right away.

Q. 106. And your business is watching these people and watching leakages?

A. We follow all the cooperage, not only at the works, but over in the foreign countries, where the packages are emptied.

Q. 107. So you know the amount of imperfectly glued barrels both as they leave the works and as they finally arrive filled with oil in the distant countries?

A. Yes, sir.

Q. 108. And keep a check on all of the works?

A. Yes, sir.

Q. 109. And you know of nothing in your reports that indicates

that the barrels that are glued from the dried glue are any better glued than the barrels glued from glue that has never been dried?

A. There is no difference at all in the reports that we get from the other side.

JAMES G. NEWCOMB.

411 U. S. Circuit Court, Southern District of New York. In Equity.

EDWARD W. LEGGETT
v.
STANDARD OIL COMPANY.

Testimony taken on behalf of defendant, at New York, before Joseph Gutman, Jr., United States commissioner, April 4, 1888, at 2.30 o'clock p. m.

Present: C. C. Beaman, for defendant; Edwin M. Felt and Samuel C. Reed, for plaintiff.

CHARLES F. CHANDLER, being duly sworn and examined, testified as follows:

Q. 1. What is your name, age, and occupation?

A. Charles F. Chandler; occupation, chemist; residence, New York city; age, fifty-one. I am professor of chemistry in the School of Mines, Columbia college.

Q. 2. Have you from time to time testified as an expert in patent causes and in reference to inventions and relating to chemical subjects?

A. I have.

Q. 3. Have you visited the works of the Standard Oil Company at Bayonne, New Jersey, and seen the process of gluing barrels as there practiced?

A. I have.

412 Q. 4. Have you examined and read the reissued letters patent granted to Edward W. Leggett on which this suit is brought?

A. I have.

Q. 5. Have you read the testimony of Messrs. Ransom H. Sargent and others relating to the gluing of barrels by him, and also the testimony of William H. Abbot with reference to the gluing of barrels by him, and also the testimony of Warren W. Green with reference to the gluing of barrels by him?

A. I have.

Q. 6. Are you familiar with what has been written in chemical and other books with reference to the manufacture and uses of glue?

A. I am.

Q. 7. And with reference to the general methods by which it is prepared?

A. I am.

Q. 8. What is glue?

A. Well, glue is a peculiar chemical compound consisting of carbon about fifty per cent., hydrogen about six per cent., nitrogen about 18 per cent., sulphur from one to two per cent., and the rest oxygen. It is produced by the action of hot water or steam on a great variety of animal tissues, such as skin, sinews, bones, &c. It is soluble in water. The solution possesses remarkable binding and adhesive properties, forming a jelly on cooling.

Q. 9. How long has glue been known and its process of manufacture and its use in the arts?

A. It has been known from time immemorial.

Q. 10. And these qualities that you speak of, have they been known?

A. And its properties and uses go back to the earliest records.

Q. 11. What is the general process of manufacturing glue? I don't mean in its details, but in its general characteristics.

A. The process depends a little upon the material employed.
413 If the glue is made from pieces of skin it is customary to subject them to the action of lime and water for the purpose of swelling them and cleansing them. Then they are thoroughly washed and sometimes exposed to the air, so that the small quantity of lime that is left in them may be rendered inert by the action of the carbonic acid of the air, or instead of that they are sometimes treated with an acid to neutralize the lime, as it is found that the presence of lime in the glue stock injures the quality of the glue produced. If the glue is to be manufactured from bones, it is customary to submit the bones to the action of an acid like hydrochloric acid to remove the phosphate of lime. If the glue is to be made from fish skins, rather from fish bladders, the air-bladders of fishes, it is hardly necessary to submit them to any purifying process. When the glue stock is in proper condition and well soaked with water it is readily converted into glue by heat. This is applied either by heating the mixture of glue stock and water, either by free fire, steam jacket, or by blowing live steam into it, or the whole mass may be melted into glue by the direct application of steam without water. In any case it is the action of the hot water that turns the animal tissue, which is not soluble, into glue, which is soluble. The texture of the original tissue is entirely destroyed, and the result is a solution of glue in water, and practically it may be said that the glue is finished when the tissues are dissolved in water, and, if necessary, when the solution has been strained. If this solution is allowed to cool, it solidifies to a jelly. The hot solution may be used at once for the purpose of glue, and is so used, or the jelly produced by cooling the hot solution may be put into convenient packages, such as barrels or hogsheads, and transported to the place where it is intended to use it. This is also a common custom, and the glue jelly can be brought into a liquid condition by the application of heat. If, however, the glue is to
414 be preserved for any great length of time or to be transported to any great distance, then it is customary to get rid of the water contained in the jelly by drying. For this purpose the jelly is cut into slices, and these are exposed to the air on nets made

of twine, when the glue will be left in the form of hard, dry plates, or slices. This is dry glue. In order to use this it is necessary to return the water which was lost by evaporation, so this dried glue is put into a suitable vessel and covered with water, and heat is applied, when the glue passes again into a solution and is ready for use.

Q. 12. What effect do the different materials from which glue is made have upon the product?

A. The character of the material determines the color of the glue and its adhesive properties. Some stock makes better glue than other stock.

Q. 13. But the process is substantially the same whatever the stock—that is, first cleaning and then heating in water and thus forming glue, and then, if desired, allowing it to cool into a jelly or carrying the process farther on to the dry glue of commerce?

A. Yes; that is the case.

Q. 14. Is the treatment of the stock with acid or with lime an essential part of the making of glue?

A. It is not.

Q. 15. What effect does it have upon the making of the glue; does it affect the amount produced and the quality, or to what extent does it affect it?

A. It affects the purity of the glue produced—that is, the cleansing operation removes certain substances which would not produce glue. As a matter of fact glue is produced whenever a joint of meat is boiled in water. Calves'-foot jelly is simply glue more or less pure, and what the housewife calls soup stock, which is made of a shin bone of beef, is simply a solution of glue or gelatine obtained from the meat or the muscle.

415 Q. 16. So far as the soup makes a jelly when cold it is glue, as I understand?

A. Yes; glue and gelatine are one and the same thing, except that when the product is obtained from animal tissues which are sweet and fresh and entirely free from disagreeable order; then it is called gelatine; if it is made carelessly from scraps or skin or bones, &c., which may be, perhaps, a little decomposed before they are used, and when the manipulation is carelessly conducted, then the product is glue.

Q. 17. Can you use what you have called gelatine for all the purposes for which you can use glue, so far as adhesive purposes are concerned?

A. Yes; you can.

Q. 18. Could you line oil barrels with gelatine or with what you call calves'-foot jelly and produce the same result that you saw produced in lining oil barrels with glue at the works at Bayonne?

A. You could.

Q. 19. Then all the jellies or gelatines and glues contain the same substantial qualities, namely, the adhesive qualities, do they not?

A. They do; they all owe their character to the presence of gelatine, which is the chemical name of a substance which results from the action of hot water or steam on animal tissues.

Q. 20. How does the proportionate amount of water in these solutions or in these jellies affect the adhesive qualities, other things being equal? I mean by that when is glue most adhesive, when it has the most or the least water?

A. That depends upon the surface to which it is applied. If the solution of glue is simply applied to one surface, as, for instance, pouring it out on a sheet of glass, then it is a matter of very little consequence how much water there is in it, because the surplus water evaporates, and when the glue or gelatine finally dries and hardens it adheres to the glass with great firmness. I have
416 seen plates of glass from which the thin coating of gelatine had actually torn out the substance of the glass by shrinkage owing to its adhesiveness; if, however, you employ a solution of glue to fasten two surfaces together, as two pieces of wood, then the glue must not contain too much water, because if it does as it loses this water in drying there will not be enough of the glue principle left to fill the space between the two surfaces, so that for glueing two pieces of wood together it is necessary there should not be too much water; otherwise there will not be enough glue.

Q. 21. That is, for gluing two pieces of wood together you must have a thick or dense solution?

A. Yes; it is necessary then to have a thick solution, so that the dry glue will fill the space between the two surfaces.

Q. 22. But in making dry glue from jelly it is not important whether you start with a solution that has nine parts of water to one of glue or four parts of water to one of glue, provided in the end you by evaporation dry out all the water?

A. No; that is a mere matter of convenience. The more water there is in glue when you get it into a jelly to dry it the longer it will take to dry and the longer it will be exposed to what will be unfavorable influences during the glue-drying process, as glue is very liable to undergo decomposition during the drying.

Q. 23. What is the object of drying glue and putting it into that state?

A. Simply to reduce the volume and weight and make it more convenient for transportation, and also to get it into a condition in which it will not undergo decomposition or putrefaction.

Q. 24. Is the drying of glue, so far as you have any knowledge, for any purposes except for purely commercial purposes, such as you have above indicated, namely, for transportation and keeping?

417 A. That is the only object that I know of in drying glue.

Q. 25. Is the glue that has been dried better for using for any of the purposes for which glue is used in the arts than glue that never has been dried?

A. It is not.

Q. 26. Is the reduction of dried glue to a liquid state anything more than the returning to that dry glue of the water that had before been in it and had been taken from it by evaporation?

A. It is not.

Q. 27. Does the change that takes place in the drying of glue ac-

complish anything more than removing water from the glue, assuming always that it is done in such a way that it would not deteriorate by being too long exposed to dampness, &c.?

A. That is all the evaporating of the water accomplishes.

Q. 28. Does the reducing of the dry glue to a liquid state do anything more than put back this water which has once been evaporated?

A. It does not.

Q. 29. You have read the testimony of Messrs. Sargent and Abbott and Green, and understand the process therein described of gluing barrels, have you not?

A. I have.

Q. 30. Assuming that their statements are true, what was the product that they made and with which they lined barrels?

A. It was glue.

Q. 31. You have visited the factory of the Standard Oil Company of New Jersey, at Bayonne, and have seen the gluing of barrels there, have you not?

A. I have.

Q. 32. What experiments, if any, did you make there *if* for the purpose of seeing if there was any difference in the result be-
418 tween the gluing of barrels with liquid glue that had never been dried or with liquid glue that had been made from dry glue?

A. I saw barrels treated both with liquid glue that had never been dried and with a solution obtained by dissolving dry glue in water, the two solutions being of the same strength and poured in like quantities into barrels in like condition, the bung-holes closed at once and the barrels rolled about so as to wet the inside completely, the bungs removed and the excess of glue solution allowed to drain out. Then, after the barrels had stood a sufficient length of time to allow the glue to set, the hoops were loosened and the heads were taken out and I inspected the interior.

Q. 33. What, if any, difference could you discover between the barrels glued by these two processes?

A. There was no difference. I carefully examined the surface of the staves and also the heads of the barrels, and cut with my knife into the wood, and I scraped the surface, but I could not detect any difference in the consistency or the completeness of the coating.

Q. 34. What experience have you had, if any, with reference to the extent with which liquids can be made to penetrate, with woods?

A. I have had considerable experience in that matter, having been employed by the Navy Department to investigate the treatment of timber with solutions for its preservation. I had occasion to take sticks of timber of the greatest variety of wood and expose them to the action of hot solutions under great pressure and afterwards to saw sections out of these timbers and test them to see how much these solutions had penetrated. I find that there is very little penetration except at the ends; very little penetration of solutions

into wood when they are applied to the sides of the timber. The porosity of the wood is lengthwise of the stick.

419 Q. 35. That is, in the way the sap runs, up and down?

A. Yes; the way the sap circulates.

Q. 36. Have you tried this under high pressure?

A. Yes; under high pressure.

Q. 37. How high?

A. I have really forgotten how high, but I am quite sure it was several atmospheres.

Q. 38. What was the amount of pressure that was in these barrels as they were ordinarily treated with glue, the solution being at the temperature of 160 to 190?

A. A very trifling pressure. The pressure is due to the hot air in the barrels. The glue solution that is put into the barrel is considerably below 212 Fahrenheit; consequently there can be no steam pressure developed, but the air which was originally of the temperature of the atmosphere will of course be heated somewhat by the hot-glue solution, and that heat causes expansion and produces a little pressure. It is an air pressure, and of course at the same time this air becomes moist from the glue solution, so when the bung is afterwards removed there is a little puff of hot air which is moist, moist like the air from the lungs, which shows its moisture in the cold atmosphere.

Q. 39. What is the purpose of lining these oil barrels with glue?

A. It is simply to close the holes and pores, more properly the holes, and also to wet the surface of the barrel inside, so that it will shed oil, as kerosene oil is a very penetrating fluid, and by wetting the surface of the wood this penetration is prevented and at the same time the holes are all stopped with this thick glue.

Q. 40. Then as the glue dries in the barrel it makes this coating on the inside of the barrel to the extent that it is applied and so keeps the oil from coming through, if I understand you?

420 A. Yes; the glue coats the surface of the wood and fills all the holes so that the kerosene oil cannot leak through.

Q. 41. And this effect is produced equally well whether you use the liquid glue that has been made from dried glue or liquid glue that has never been dried?

A. Equally well.

Q. 42. And the pressure is just the same in either case and the penetration of the wood is the same?

A. The pressure is the same, as it depends entirely on the temperature of the glue as it is poured into the barrels, and the penetration is the same, as there is no difference in the consistency of the glue solution whether the glue has been previously dried or not.

Q. 43. Have you brought with you any books published prior to 1873 which show or make reference to the sale of glue in its liquid or jelly form for commercial purposes?

A. I have.

Q. 44. Please refer to some of them.

A. Well, here is Wagner's Jahres Bericht Der Chemischen Tech-

nologie for the year 1869. On page 657 is an account of an article which was published in several different trade journals in Germany. References are given in the year 1869 with regard to the sale of glue in the form of jelly without previous drying. The author states that it is found that the adhesive and binding property of the glue is decidedly injured by the process of drying in the air, and that at the glue manufactory near Dresden they are now selling the glue in the form of a jelly put up in barrels. In this way they furnish a glue of uniform quality which it is only necessary to warm to make use of for all the purposes for which glue is employed. In the same work, which is an annual publication, for the year 1870, on page 671, is a further account of an article by another author, published in different trade journals in Germany, with regard to the advantages of buying glue in the form of a jelly. The
421 author states that it is especially useful to the manufacturers of cloth, paper, and matches and to the carpenters and instrument-makers and to the book-binders. In the same work for the year 1871, on page 839, is reference to another article published in the German trade journals on the same subject, which simply enlarges upon the advantages of this glue jelly over the dried glue. In Jacobsen's Chemisch Technisches Reportorium for the second half of 1869, on page 49, is an article on this same subject, which appeared in these different German trade journals, explaining how this glue jelly has found its way into the trade as a substitute for dried glue, and in the same work for the first half of the year 1870, on page 79, is an article copied from one of the German trade journals on the advantage of this glue jelly as a substitute for dried glue. In the Reportorium der Technischen Literateur for the year 1869, published by F. Schotte, on page 158, is reference to an article on the improvement in the manufacture of glue, avoiding the drying; on page 219 is reference to an article on experiments in glue in the form of a solid jelly; on page 348 is reference to an article on glue jelly; on page 607 is an article on glue jelly, its cheapness and other advantages, and also on improvements in the manufacture of glue; also relating to this subject in Bruno Kerl's Reportorium der Technischen Literateur, on page 777, are references to four different articles on the subject of the use of glue in the form of jelly. One of these is by Stalling, quoted from numerous trade journals; the second is by Reutsch; the third is mentioned without the name of an author, and the fourth is by Clauss. The first and second were published in 1869, and the third and fourth in 1870. These are all the books I think of before 1873.

Q. 45. These books are books that are regularly published and accessible to all persons, are they not?

422 A. They are.

Objected to, unless the professor knows all about it.

By Mr. REED:

Q. 46. Have you been in Germany and seen them?

A. I have been in the habit of receiving these books ever since they were published.

Q. 47. You don't know anything about their authenticity, do you?

A. I know that they are the standard books on chemical industries, and are books that everybody goes to for information, and that these articles that are contained in them are quoted from the regular trade journals in Germany. I have been in the habit of receiving these ever since they have been published. I have received them from year to year ever since they came out.

By Mr. BEAMAN:

Q. 48. All of these books you have had in your library here since the year following their publication?

A. I have had all of them; yes.

Q. 49. The several books that you have cited refer to the trade journals in which the articles are published so that they could be identified, do they not?

A. Yes; the author gives the volume, the date, and the page.

Q. 50. And these books are not simply for the chemist, but for the practical tradesman and manufacturer and persons connected with the art, are they not?

Objected to as leading.

A. Yes.

Q. 51. Will you hereafter prepare extracts from the books
423 in the German language, showing the part which you have translated—copy them in German and add them to your examination?

A. I will.

Cross-examination by Mr. REED:

X Q. 1. Will you tell us the usual process of manufacturing glue in the manufactories of this country?

A. It is customary to take the trimmings of skin and soak them in water and lime for a certain length of time and then give them a thorough washing and then expose them to the air to neutralize the lime which remains in them, or they may be exposed to carbonic acid gas and then boil them with water, and, when the solution has been effected by boiling with water, it is then run into suitable moulds and allowed to cool and set and form a jelly. This jelly is then cut up into slices and these slices are spread upon nets and allowed to dry.

X Q. 2. What is that stock that they use in that way that you refer to now?

A. Skin; animal skin. That is the most common material—trimmings that come from the slaughter-houses and tanneries.

X Q. 3. Is there anything else that they make glue out of?

A. Yes; out of the sinews and out of the feet and out of the bones.

X Q. 4. What is mostly used is what you say, then?

A. Well, I have not visited a great many factories. My practical experience resulted from visiting the works of Peter Cooper many

years ago. Years ago I had occasion to visit the glue works of Peter Cooper, deceased, in years gone by, and I observed the process of making glue there.

X Q. 5. How long do they boil this material in the kettles?

424 A. I cannot say exactly how many hours. They boil it until it is dissolved. That may be one or two hours or four or five, according to circumstances. I do not remember the exact length of time. That depends, I suppose, upon the stock.

X Q. 6. Supposing that these skins that you refer to—are they fresh skins?

A. I think the material that they were using at the Cooper factory were always fresh materials.

X Q. 7. Fresh from the slaughter-house?

A. Yes; they were not all fresh either, I remember, because I brought away a lot of specimens. I remember that they had a lot of dried stock, tails, and pieces of skins that were perfectly dry. I have them still in my museum at the School of Mines.

X Q. 8. Did they ever treat the fresh skins with acids?

A. Not that I know of; I do not remember of being told that they used acids except to neutralize the lime after the skins have been submitted to the action of lime. The object in that case is entirely to neutralize the free lime, which would injure the glue.

X Q. 9. In the case of bones, what do they put in them?

A. To get the best effect from bones it is best to remove the phosphate of lime. Bones consist of about one-half their weight of phosphate of lime, and of course that does not produce any glue, and it is better to get at the tissue which produces the glue by first removing the phosphate of lime.

X Q. 10. Do they use sulphuric acid at all?

A. Yes; sometimes, to neutralize the lime, but it is not necessary.

X Q. 11. What is the difference in using hydrochloric and sulphuric acid, and which is best?

A. There is considerable advantage in using hydrochloric, because the phosphate of lime dissolves completely in hydrochloric acid, while only partially in sulphuric acid; that is the rea-

425 son that hydrochloric is better than sulphuric, but hydrochloric is more expensive than sulphuric, so it is cheaper to use sulphuric.

X Q. 12. What degree do they use, and whose process do they use here, Twaddle's?

A. Well, that depends entirely upon the nature of the workman. If he is a scientific workman he uses a hydrometer to test the exact strength of the acids, but if he is an ignorant workman he probably would not use any hydrometer.

X Q. 13. What other processes are there?

A. Baume is the name of another scale. The true and specifically graduated scale tells you the real weight of the acid. It is a mere matter of fancy among workmen which of these scales they will employ for testing the strength of the acid.

X Q. 14. How long do they keep these bones subjected to the action of this acid?

A. Well, until the phosphate of lime is dissolved. I don't know how long that would take.

X Q. 15. How long do you think it would take?

A. It would depend upon the size of the bones. I have repeatedly treated bones in that way myself, but, as time was a matter of no consequence, I put the bones in the diluted acid and left them there, and when I had occasion to take them out they were sufficiently treated. How long it would be necessary in a glue factory, I cannot say.

X Q. 16. Did you ever see any glue made from tanners' scraps?

A. I think they were using tanners' scraps at the Peter Cooper glue works when I was there.

X Q. 17. What would be the process at the glue works of Peter Cooper to make glue from tanners' scraps if the tanners' scraps are dry when they come to them?

A. The first thing would be to thoroughly soak them with water, treat them with lime, and cleanse them, and then boil them and dry the jelly. If they were fresh hides and not dry they
426 would simply lime them, unless they were previously limed.

X Q. 18. If they were not tanners' scraps, then would they lime them?

A. There are two kinds of tanners' scraps—scraps of skins that have not been tanned and fragments that have been tanned. Which do you mean?

X Q. 19. I refer to the ordinary tanners' scraps—that are known as such—which are bought for making glue, and whether limed or unlimed, however they may use them. Do they ever use them without their being limed?

A. If the tanners' scraps have been limed thoroughly it is only necessary to get rid of the lime which is in them by a thorough washing and either drying them in the air or exposing them to the action of a little acid. As soon as the lime is removed it is then in order to boil them in water and convert them into glue.

X Q. 20. What would be the effect of taking these tanners' scraps and boiling them without liming them?

A. The glue would not be quite so clean; that is all.

X Q. 21. Would it be as good?

A. As good for many purposes.

X Q. 22. Would it be as strong?

A. That would depend entirely upon the condition of the skins. If the skins were pretty clean the glue would practically be about as good as if they had been limed; but if the skins were very dirty, of course that dirt would dilute the glue and injure its quality.

X Q. 23. Suppose it had the hair on?

A. Well, that would not make much difference for glue; the hair would be strained out in the process of straining the solution. The presence of hair does not prevent the formation of glue.

X Q. 24. How long would you boil these tanners' scraps?

427 A. Well, an hour or two might be sufficient, and it might be necessary to boil them four or five; it would depend upon how thoroughly soaked they were and how solid the tissue was.

X Q. 25. Suppose you boil them twenty-four hours; what would be the effect?

A. I do not see that it would make any great difference.

X Q. 26. It would not injure the glue?

A. No; I do not think it would. It is better not to boil them too long.

X Q. 27. In your opinion, glue made from tanners' scraps that have never been limed is just as good as glue made from tanners' scraps that have been limed?

A. No; I would not say it is quite as good. It depends entirely upon the purpose for which it is to be used.

X Q. 28. Have you ever seen it done personally?

A. I have seen the operation going on.

X Q. 29. Have you ever seen tanners' scraps that were not limed made into glue? Have you ever seen it done personally?

A. No; I do not recollect any case in which I have. I have seen skins made into glue without liming, but I do not remember seeing any tanners' scraps made into glue without liming.

X Q. 30. Have you ever seen ordinary hides taken from the butchers, for instance, made into glue without having first been treated with acids. I ask you personally, now.

A. No; I never have—that is, I cannot say that they were or were not treated with acids. I do not know the object of treating them with acids.

X Q. 32. You say that you never have seen them. That is all that I want. Now, relative to the strength of the glue that is made by these different processes. How can you tell that without first using a hydrometer?

428 A. By the word strength I suppose you mean the concentration. The hydrometer does not tell the strength of the glue; it does not give the adhesiveness; the hydrometer only tells the concentration.

X Q. 33. That is what I want.

A. Well, you can tell the consistency of the liquid without the hydrometer, roughly; one can tell whether the solution is thick or thin by simply raising a little of it and letting it fall back into the liquid, but to determine it with accuracy you need some instrument. It is not necessary, however, to use an instrument.

X Q. 34. Are not instruments always used by glue manufacturers to determine strengths?

A. I think very likely. It is easy enough to use instruments, but it is not absolutely necessary.

X Q. 35. Would you or would you not, as a manufacturer of glue, use one?

A. It would depend altogether on what I was going to do. If I wanted to manufacture glue to sell and wanted to get the same uniform results and run my establishment in the most economical way I should make use of instruments and do everything by rule.

X Q. 36. How long are these bones or scraps kept in lime water?

A. They are soaked there a few days or a few months, according to the convenience of the manufacturer.

X Q. 37. Would they not be injured by keeping them there several months?

A. Not particularly; in the presence of a large amount of lime they do not undergo any change; it is a very good way to preserve them.

X Q. 38. What are they washed with?

A. Washed with water.

X Q. 39. What kind of water—ordinary water?

A. Ordinary water.

X Q. 40. It is not necessary to use anything else?

A. Well, after they have washed away all they can with ordinary water, if there is any lime left on them they may use a little
429 acid to neutralize that lime. If they are going to tan them they may wash them with dung, and that process has been used in the manufacture of glue, but it is not absolutely necessary.

X Q. 41. How large a proportion of glue would you get from, say, three bushels of tanners' scraps—I mean without treatment, taken without being limed and boil them a few hours—how much glue would you get from that?

A. Three bushels of tanners' scraps; I can only guess at it. I should say that you would get three bushels of good glue jelly out of it.

X Q. 42. It would make three bushels of jelly?

A. Yes; because jelly contains a great deal of water, and I should think that three bushels of good tanners' scraps would make three bushels of good glue jelly, judging from my own experience in making glue on a small scale.

X Q. 43. What would that weigh?

A. Three bushels would probably weigh 150 pounds or more.

X Q 44. Then you could get 150 pounds of good glue jelly from three bushels of tanners' scraps that had been boiled several hours?

A. I think you would get more. I think that is a low estimate.

X Q. 45. And it would not make any difference whether they were limed or unlimed as to the efficacy of the glue?

A. No; I think not; of course, if you are going to dry the glue and sell it as staple glue in sheets, the marketable quality of the glue depends upon its appearance to a large extent, and of course the glue-maker has to consider that in the manufacture of the glue, so that when it is dried in sheets it will look well, and I think that a great many of the precautions that the glue-maker resorts to are for the purpose of making a glue that looks well and sells readily; not because the glue is any better for many of the purposes for which it is employed.

430 X Q. 46. You have told us, Professor, that there is no difference between what is known as soup glue—you know what I mean by soup glue as referred to here?

A. Yes.

X Q. 47. That is glue that has never been dried. You say there

is no difference between that glue and the glue which has been dried and remelted in their effect. You say that the soup glue is no better than the other. Is that what I understand you?

A. I say that if the dried glue has been dried under circumstances which have prevented its being injured by atmospheric effects, then when it is dissolved in water to the same consistency as the original glue soup they will be equally good and there will be no essential difference between them; but it may happen that in drying the glue it suffers considerable deterioration during the process of drying, because the atmosphere is full of the germs of various microbes, such as mould plants and bacteria. These germs get into everything which is exposed to the air, and glue jelly is one of the most favorable materials for the growth and development of these creatures. In fact, the modern method of investigating them is to cultivate them in glue jelly. I have made the greatest number of experiments in such cultivations. It is only necessary to expose moist glue jelly to the atmosphere, and a momentary exposure is often sufficient for some of these germs to get into the glue jelly, and then they begin to grow; and if they are allowed to grow—if the glue is kept moist—they will completely destroy it; but in the process of glue-drying the, of course, rapid evaporation of the water, under favorable circumstances prevents any very serious injury, and yet it sometimes happens that a whole batch of glue is entirely destroyed by these changes that take place from these atmospheric influences.

431 X Q. 48. You consider it a very precarious part, then—the drying process?

A. Yes.

X Q. 49. The most precarious, is it not?

A. Yes; I suppose it is the most precarious part of the process.

X Q. 50. It is about as expensive a part of the process, too, as there is, is it not?

A. I hardly know what the ratio of that part is. There is, first, the cost of the raw materials, then the cost of boiling the raw material, and the other operations, and the cost of drying. What fraction of the cost falls upon the drying part of it I hardly know.

X Q. 51. What would you say with reference to the effect of the weather upon it?

A. The weather has a great effect upon the drying. If the weather is dry, then the process proceeds rapidly; but if the weather it damp, then, of course, the glue does not dry and the microbes have the best opportunity to attack the glue, and if it is warm and moist the warmth liquifies the jelly, and it sometimes happens that the jelly melts and runs around the twines and it is impossible to get it off the twine netting.

X Q. 52. Does cloudy weather have anything to do with it?

A. Yes; it is the general opinion among glue-makers that cloudy weather and thunder storms are especially objectionable.

X Q. 53. Large portions of glue that are made in this way may be utterly destroyed, may they not?

A. Yes.

X Q. 54. Is there not in soup—would you not think there was a water composition which is better in its effect for lining barrels than would that made from dried glue; would you not think it would blend more with the barrel than that made from glue that had been dried and remelted would? Glue when it has been dried, does it
432 not lose the water composition and does not that glue, when it has been several times remelted and water added to it, become weakened?

A. There is no difference in the water that is added to the glue and the water that is in the soup glue if the solution is of the same consistency—that is, if the same quantity of water is present in both cases the water which is added is just as well blended with the glue as the water that was there originally. If, however, glue is repeatedly dissolved in water and dried it will greatly lose its strength, because every time the glue is melted and exposed to the air and allowed to cool and dry it runs the risk of more or less decomposition.

X Q. 55. You told us that glue was very much injured by the weather, thunder storms, and that it deteriorates in foggy weather or cloudy weather. May not this glue be so much injured that when it is remelted it will lose largely in strength, and in that way would not this soup glue be infinitely better?

A. I don't think glue remelted would make any practical difference, but repeated remelting would probably injure the glue if it were to be employed by a carpenter or for gluing two pieces of wood together, but if it were to be employed for coating the inside of barrels I do not think it would make any difference, as the effect of the glue on the inside of the barrel has nothing to do with its binding property.

X Q. 56. All you know about that is what you have seen in your one trip down to Bayonne? Is not that a matter of fact?

A. Oh, no; this is the result of my thirty-odd years of experience.

X Q. 57. With glue?

A. With glue and in treating of that class of subjects. I am in the habit of studying and observing these subjects.

X Q. 58. You have never had much to do with glue, have you?

433 A. I cannot remember when I did not have a glue pot, being a natural mechanic. I remember having a glue pot when I was a small boy.

X Q. 59. Did you ever use soup glue for any purpose before it was dried?

A. Only for the purpose of experimenting. I have experimented with soup glue.

X Q. 60. Where did you get it?

A. Made it.

X Q. 61. How did you make it?

A. I got some chopped rabbit skin, which is one of the materials they use for making soup glue. I boiled it with water and poured it through a strainer. That is the process.

X Q. 62. What did you do that for?

A. I did it for the purposes of this case; in order to familiarize myself with the matter.

X Q. 63. But you have never seen the effect on barrels except on that one trip to Bayonne?

A. Only on that trip which I made the other day.

X Q. 64. What was the stock you used?

A. At Bayonne it was rabbit stock.

X Q. 65. That is, rabbit skin?

A. Yes; rabbit skin.

X Q. 66. What was the dry glue that they used?

A. That was the regular Peter Cooper dry glue, made probably of tanners' stock.

X Q. 67. How do you know? Did they tell you it came from a tannery at Peter Cooper's glue factory?

A. I examined the glue. It looked like good, regular glue.

X Q. 68. Was that Peter Cooper glue that you speak of as limpid and as strong as that which was made from cony cuttings?

A. It had the same strength under the same temperature. We used a thermometer and a hydrometer.

X Q. 69. Was it as limpid?

A. It was as limpid at apparently the same consistency.

434 X Q. 70. Pieces of scraps boiled with the hide on without being limed, wouldn't the lime destroy the glue?

A. Well, that would depend upon the condition of the lime; if there was a great deal of caustic lime it would interfere with the jellying of the glue, but if the hides had been limed and allowed to lay for a few days exposed to the air—the carbonic acid of the air—the lime would have become carbonated, and in that state would not do any harm nor would the hair do any harm.

X Q. 71. How long will this liquid jelly that you speak of, that you refer to in your books—how long would that keep fresh?

A. Well, that would depend on how it was handled; if it were poured hot into barrels and the barrels headed up it would keep a long time, because the heat would destroy the vitality of any microbes already in it, and heading it up as one great piece of jelly of the size of the barrel would prevent the access of fresh germs, and it might keep for weeks or months in that condition.

X Q. 72. Have you ever tried that yourself?

A. Oh, yes; I have glue jelly that I have kept for months. We do it regularly for our experiments with microbes. We prepare a large stock of glue jelly and draw from it as we want it. The only way to preserve it is to keep it from the access of microbes in the atmosphere.

X Q. 73. They would attack it the minute the barrel was opened, would they not?

A. Well, it takes some time for them to develop. Sometimes they will develop in twenty-four hours, sometimes in forty-eight hours, and sometimes seventy-two hours are required and even a longer time; it would depend upon the surface to which they have access.

X Q. 74. Suppose you take twenty pounds of jelly glue and put it on that table, how long would it last?

A. You mean liquid?

435 X Q. 75. I mean gelatine in the form that soup glue becomes after it becomes cold. How long would it keep exposed to the air?

A. It would depend entirely upon the locality and the conditions; in some places it would keep indefinitely, because the air in some places is quite free from germs.

X Q. 76. Well, in New York city, for instance, how long would it keep?

A. If it were poured out on a table in a thin layer in three or four days it would begin to change, but if it is in a thicker layer it would take longer; it depends entirely upon the amount of surface exposed to the air.

Redirect examination by Mr. BEAMAN:

R. D. Q. 52. Glue was made and known a long time before hydrometers were, wasn't it?

A. I think it was. Well, I don't know, for they say that the hydrometer was invented more than a thousand years ago.

R. D. Q. 53. You can make glue just as good—you can make soup glue just as well—without a hydrometer just as well, can't you?

A. Certainly.

R. D. Q. 54. It has been known for a long time that glue in this jelly form was liable to spoil?

A. It has.

R. D. Q. 55. That is one of the well-known cardinal facts in glue-making?

A. Yes.

R. D. Q. 56. In making dried glue people take care to prevent that, do they not?

A. They do; they would have to go out of the business if they did not.

R. D. Q. 57. This glue jelly that you spead of, that is liable to spoil and to be attacked by microbes, is liable to be injured whether it is made from glue soup that has never been dried or from glue soup that has been made from dried glue?

436 A. Equally so.

R. D. Q. 58. There could not anything else have been produced of suitable quality for lining barrels by Messrs. Sargent and Abbott and Green, as you read their testimony, except glue, could there?

A. Nothing else; they produced glue.

CHARLES F. CHANDLER.

Translations Made by Witness, Prof. Chandler, of References Cited by Him.

(See pages 144–154.)

Translation of Reference No. 1.

Yearly Report of Chemical Technology for 1869, by Johannes Rudolph Wagner, Leipsig, 1870, vol. XV, 1869, page 657.

Glue.

Rentsch [1] reports on progress in the preparation of glue.

Of late not only have numerous means been found to preserve glue as a jelly, but it has been proved that its adhesive and binding power is greatly diminished in the process of drying in the air. The animal substance is greatly changed by exposure to the air during the drying process and every change of temperature affects it in a different manner. Hence it is that the quality of glue even when derived from the same source is never the same.

At the works of Charles Stalling, at Pieschen, near Dresden, a glue is offered in the form of a jelly, the laborious operation of drying having been abandoned.

437 The product is crude bone glue. It contains no chemical mixtures, but is extracted in a peculiar manner, essentially by a treatment of the bones with cold water under steam pressure, whereas in buying sheet glue it is not known how much water is bought with it (even the dry, brittle sheet glue contains 12½ per cent. of water); this uncertainty is avoided in this glue. The manufacturer guarantees a specific gravity which is easily ascertained by testing the jelly with a Beaume acid hydrometer.

The new glue jelly is boiled with water like ordinary glue and is thinned, as required by the different industries. It is evident that a glue not subjected to the damaging influences of the weather in drying, but which is immediately packed in hermetically sealed casks and congealed, after having been subjected to a boiling temperature, preventing fermentation, shows the good quality of the glue substance to a greater extent than some others which are still treated by chemical means, as bleaching, &c.

The chief advantage is the very low price of the glue jelly. While other kinds of glue are produced at from 13 to 32 thalers per centner (averaging 15 to 17 thalers, hence 5 silver groschen per pound) the retail price of the glue jelly is 2 silver groschen per pound or 6⅔ thalers per centner. Even if it contained more water there would still be a saving of at least 50 per cent.

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[1] Rentsch, Nach der Dresdener Gewerbe-Vereins Zeitung, durch Deutsche Industrie Zeitung, 1869, page 166; Polytechnische Notizblatt, 1869, page 175, 323; Polytechnische Centralblatt, 1869, page 1117; Schweizherische Polytechnische Zeitschrift, 1896, page 82.

438 *Translation of Reference No. 2.*

Yearly Report of Chemical Technology for 1870, by Johannes Rudolf Wagner, Leipsig, page 671, vol. XVI.

Glue.

Further communications are made by K. W. Clauss (1) about the glue jelly of Stalling's factory, at Pieschen, near Dresden (2).

Glue jelly has been found particularly good in cloth, paper, and match factories; also by cabinet-makers, instrument-makers, and book-binders.

Adulterations are not possible, and the quality may be immediately detected by the specific gravity.

Since all the difficulties and losses which occur in sheet-glue manufacture are avoided, glue jelly is much the cheaper, viz., $6\frac{1}{2}$ to $6\frac{2}{3}$ thalers per centner. The raw material, bone, is obtained partly from South America. As is well known, the manufacture of sheet glue is so dependent on the weather that it will take, for instance, three days to dry one batch of glue in favorable weather, while it may take three weeks to dry another. A shower of rain or mist will often ruin the whole batch, and the dividing line between complete ruin and mere deterioration is very difficult to tell from external appearances. Commercially the form of the glue is not now essential, but common practice still clings to a few kinds of glue which have been found good.

Any one constantly making the same kind of glue from the same source will gain certain facts from experience. Of course every manufacturer is obliged to fix his prices so that they will cover the uncertainties which result in the spoiling of the glue and the impossibility of drying it in winter.

439 Artificial drying-rooms give a more certain result, but still the extra cost is borne by the consumer.

The factory of W. Stalling, at Pieschen, produces glue in a different form, a firm jelly, the laborious operation of drying in sheets being abandoned. The product is crude bone glue; it contains no chemical mixtures, but is extracted in a peculiar manner entirely by treatment of bones with cold water under steam pressure; whereas in buying sheet glue we do not know how much water we buy with it (even the dry, brittle sheet glue contains $12\frac{1}{2}$ per cent. of water which may be driven out over an oil bath); this uncertainty is avoided in the above-mentioned glue. The manufacturer guarantees the specific gravity in the present case 10 degrees Baume; hence we always have an uniform material which must be of great value in large establishments. Bone is one of the most solid substances, and it owes its solidity to the gluey substance which binds the earthy constituents; of course the bone glue shows an extraor-

[1] K. W. Clauss, Verhandlungen and Mittheilungen des Neider Osterreichischen Gewerbvereins, 1870, page 210; Polytechnische Notizblatt, 1870, page 87.

[2] Jahresbericht, 1869, page 657.

dinary solidity, and experiments made at the shipyard of O. Schlick showed that beams which had been glued together could be split more easily at any other place than the glued joint.

Hence it is evident that a glue not subjected to the damaging influences of weather in drying, but which, having been subjected to a fermentation preventing steam heat, is at once packed in hermetically sealed casks, and there congealed can show the good qualities of the glue substance to a greater extent than others whose adhesive power is injured by being treated by chemical means, as bleaching, &c. It is to be noted that the new glue jelly is to be boiled with water just like ordinary glue and thinned as required by the different industries. Its exceedingly low price is noticeable; while other kinds of glue are produced at from 13 to 32 thalers per centner (aver-
440 age 15 to 17 thalers, hence at 5 n. gr. per pound), the retail price of the glue jelly is 2 n. gr. per pound and $6\frac{2}{3}$ thalers per centner. Even if it contained more water there would still be a very great saving of at least half the cost. According to testimonials from Morbitz, a cloth manufacturer at Bautzen, in sizing 75 pounds of yarn with 27 pounds of above-mentioned glue jelly at 54 n. gs. (retail) the same result was obtained as when using 18 pounds of the ordinary horn glue at 97 n. gr. The advantage in price is then in the proportion of 3 to 5.

Translation of Reference No. 3.

Yearly Report of Chemical Technology for 1871, by Johannes Rudolf Wagner, vol. XVII, page 839.

Glue.

Further communications [1] about glue jelly [2] are at hand. From these it is evident that the glue jelly from the factory of William Stelling, at Pieschen, near Dresden, has proved of great advantage in sizing paper. It is preferable to mix the solutions of vegetable size and glue jelly by boiling them previously, instead of mixing them in the Hollander engine. This new method of making glue as compared with that of resinous size has been proved to save about one-half the cost, and not only is the paper improved in every respect, but there is also an essential saving in the compounding of the materials. 45 to 50 pounds of the best soda are dissolved in 200 to 240 pounds of boiling water in a double-bottomed copper kettle, heated by indirect steam, and while stirring 300 pounds of pulverized rosin are carefully added to this boiling lye. After skimming, the mixture is boiled until the rosin has been completely dissolved and saponification is complete. Three and a half
441 to four hours are sufficient for this, and the manufacturer should be able to tell the right moment by the short dripping of the clear mass of rosin which is then easily and completely

[1] Jahresbericht, 1869, page 657; 1870, page 671.
[2] Deutscher Industrie Zeitung, 1871, page 75; Polytechnische Centralblatt, 1871, page 662.

soluble in hot water. This finished thick mass of rosin is then dissolved as required, after a few minutes' boiling according to the size of the vessels at hand (in water), in the proportion of one pound of rosin to 30 or 40 pounds of water. At this point the glue jelly previously dissolved in boiling water (100 pounds in 300 to 400 pounds of boiling water) is added while stirring to the soda rosin solution, but it is absolutely necessary that these two solutions should be well boiled together for at least five or ten minutes. If no starch is wanted, the glue is then ready for use after it has been poured into another vessel through a sieve and felt. It is best to carry on the process of boiling and solution on an elevated platform, so that the glue solution may pass easily through the sieve and felt into the vessels on the floor beneath. Starch is added as usual, the best way being to bring the mixed finished glue which is in the vessels below to the boiling point again by means of a direct steam pipe and then quickly pour the starch mixed in lukewarm water through a fine sieve into this boiling glue solution, whereupon the steam is immediately shut off.

The scum which forms must be removed as completely as possible. The proportions of vegetable glue (rosin soap is meant C. F. C.) and animal glue per can or pail are best computed, so that to a pail (40 pounds water capacity) 1 to 1½ lbs. rosin soap and one pound glue jelly or equal parts are used. Starch may be added as required, one-half to one pound per pail or one pound rosin soap, two pounds glue jelly, and no starch to a pail. Sulphate of alumina is added to this glue in the usual manner. It is advantageous (according to circumstances) to compute 1 to 1½ pounds sulphate of alumina (which is produced at the new chemical works, "Morgen-
442 stern," at Freiberg, of an excellent quality and low price) to each pound of the dry glue present.

Translation of Reference No. 4.

Jacobsen.

Chemical Technical Repertory, revised communications upon the latest discoveries, progress, and improvements in the department of technical and industrial chemistry, with reference to machines, apparatus, and literature; edited by Dr. Emil Jacobsen.

Second half year. Berlin, 1869, page 49.

Glue jelly.

W. Stalling's factory at Pieschen, near Dresden, has produced for some time glue in the form of a stiff jelly, containing a known quantity of glue (specific gravity, 10 degrees Baume), and of low cost, 6⅔ thalers per centner. The advantage of this jelly, as compared with sheet glue, is that the manufacture always results evenly, while in sheet glue the quantity of the glue greatly decreases when the drying is done during unfavorable weather.

Polytechnische Centralblatt von Schnedermann und Boettger, page 1117.
Wiecks Illustrirte Deutsche Gewerbzeitung, page 272.
Polytechnische Schweizerische Zeitschrift von Bolley, page 82.
Bayrische Gewerbezeitung, page 76.
Polytechnische Notizblatt Bottger, page 323.
Industrie Blatter von Hager und Jacobsen, 1870, page 59.

443 *Translation of Reference No. 5.*

Jacobsen.

Chemical Technical Repertory, revised communications upon the latest discoveries, progress, and improvements in the department of technical and industrial chemistry, with reference to machines, apparatus, and literature; edited by Dr. Emil Jacobsen.

First half year, 1870, page 79.

Application of glue jelly for sizing paper.

Rudel recommends the glue jelly from W. Stalling's factory at Pieschen, mentioned in Report, 1869, 2, page 49, as being specially adapted for sizing machine paper. It is necessary to put the glue into the Hollander engine directly after the resin roap (resinate of sodium), so that in mixing the sulphate of alumina with the glue jelly one-third of the mass will be sulphate of alumina. The former, dissolved to about 10 degrees Beaume, requires to one pound about $\frac{3}{8}$ pound of sulphate of alumina.
Centralblatt fur die Papier fabrik, page 19.

Translation of Reference No. 6.

Schotte.

Repertory of technical, mathematical, and physical—journal literature, taken from official reports by permission of the royal Prussian department of commerce, industry, and public works; edited by F. Schotte, engineer and librarian at the Royal Industrial Academy at Berlin. First year, Leipsig, Quandt & Handel, 1869.

Page 158. Manufacture of glue.

Rentsch; progress in the manufacture of glue; abandonment of the drying process.
Bayrisches Industrie und Gewerbeblatt, 1869, page 60.

444 Page 219. Glue, gelatine.

Stalling; experiments with glue in the form of a firm jelly; Deutsches Industrie Zeitung, Chemnitz, 1869, page 166.

Page 348. Glue.

Stalling; glue jelly; Illustrirte Gewerbezeitung, 1869, page 272; Schweizerisches Polytechnisches Zeitung, 1869, page 82.

Page 607. Glue.

Rentsch; Stallings's glue jelly, its cheapness and other advantages. Polytechnisches Centralblatt, Leipzig, 1869, page 1117; Bayrisches Gewerbzeitung, 1869, page 76.

Rentsch; progress in the manufacture of glue. Polytechnisches Notizblatt von Böttger, Mainz, 1869, page 323.

Translation of Reference No. 7.

Kerl.

Repertory of Technical Literature, new series, 1869 to 1873, inclusive. Edited by commissioner of the royal Prussian department of commerce, industry, and public works, by Bruno Kerl, professor at the Royal Mining Academy, member of the Imperial German patent office, and of the royal technical committee for industry in Berlin, vol. II, page 777.

Stalling.

Experiments with glue in the form of a firm jelly.

Deutsche Industrie Zeitung, 1869, page 166.
Wieck's Gewerbzeitung, 1869, page 272.
Sweizerisches Polytechnisches Zeitung, 1869, page 82.

445 Rentsch.

Stalling's glue jelly; its cheapness and other advantages.

Centralblatt, 1869, page 1117.
Bayrisches Gewerbzeitung, 1869, page 76.

Glue jelly.

From W. Stalling's factory at Pieschen, near Dresden.

Breslau Gewerbblatt, 1870, page 3.
Wollen-Gewerbe, 1870, page 3.
Wurtembergisches Gewerbblatt, 1870, page 321.

Clauss.

Upon glue jelly.

Wieck's Gewerbzeitung, 1870, page 50.

References Cited by the Witness, Prof. Chandler.

Reference No. 1.

Jahres-Bericht der Chemischen Technologie für 1869, von Johannes Rudolf Wagner, Leipsig, 1870, page 657. Bd. XV.

Rentsch (1) berichtet über einen Fortschritt in der Leimbereitung. In neurer Zeit wurden nicht nur zahlreiche Mittel aufgefunden, den Leim als Gallerte zu conserviren, sondern, auch nachgewiesen, das die Kleb- und Bindekraft desselben durch den Process der Lufttrocknung bedeutend geschmälert wird. Die thierische Substanz wird durch die Luft während des Trocknens sehr verändert, und zwar bei jeder Witterung in anderer Weise. Daher rührt es auch, dass die Qualität des Leimes, und bezöge man ihn auch stets aus derselben Quelle, nie dieselbe ist.

446 Die Fabrik von Carl Stalling in Pieschen (bei Dresden), bietet nun den Leim in Form einer Gallerte, bei welcher die mühsame Operation der Trocknung vermieden wird. Das Produkt ist roher Knochenleim.

Es enthält keinerlei chemische Beimischungen, sondern ist nach einem eigenthümlichen Verfahren lediglich durch Behandlung von Knochen mittelst kalten Wassers unter Dampfdruck extrahirt. Während man bei Taffelleim nicht weiss, wie viel Wasser man mitkauft (selbst der glasharte trockene Tafelleim enthält noch 12½ proc. Wasser), ist diese Unsicherheit bei diesem Leim vermieden. Der Fabrikant garantirt das specifische Gewicht, welches leicht ermittelt wird, indem man die Gallerte mit der Baumé'schen Säurewage wägt. Die neue Leimgallerte ist wie der gewöhnliche Leim mit Wasser aufzukochen und je nach dem Bedürfniss jedes Gewerbes zu verdünnen.

Es ist natürlich, das ein Leim, welcher allen schädlichen Witterungseinflüssen beim trocknen entzogen bleibt, welcher sofort aus einer jede Gährung ausschliessenden Dampftemperatur in hermetisch schliessende Tonnen gebracht wird und erstarrt, die guten Eigenschaften der Leimsubstanz kräftiger hervortreten lässt, als mancher andere, welcher noch mit chemischen Mitteln behufs der Bleichung, etc., behandelt ist.

Hauptsache ist indessen die enorme Billigkeit der Leimgallerte. Während andere Leimsorten zu 13 bis 32 Thalern per Centner (durchschnittlich zu 15 bis 17 Thalern, also per Pfund zu 5 Sgr.) geliefert werden, stellt sich der Detailpreis der Leimgallerte zu 2 Sgr. per Pfund im Centner auf 6⅔ Thalern. Ist nun auch der Wassergehalt etwas grösser, so ergiebt sich doch noch eine Ersparniss von mindestens 50 Procent.

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(1) Rentsch, Nach der Dresdener Gewerbevereins-Zeitung durch Deutsche Industriezeitung, 1869, p. 166. Polytechnisches Notizblatt, 1869, p. 175, 323. Polytechnisches Centralblatt, 1869, p. 1117. Schweizericher Polytechnisches Zeitschrift, 1869, p. 82.

447 *Reference No.* 2.

Jahres-Bericht der Chemischen Technologie für 1870, von Johannes Rudolf Wagner, Leipsig 1871, p. 671–2. Bd. XVI.

K. W. Clauss (1) macht über die Leimgallerte der Stallingschen Fabrik in Pieschen (bei Dresden) (2) weitere Mittheilungen.

Die Leimgallerte hat sich besonders bewährt in der Tuch, Papier und Zündholz-fabrikation, sowie für Tischler, Instrumentenbauer und Buchbinder. Eine Verfälschung ist nicht möglich und die Qualitat ist sofort durch das specifische Gewicht zu erkennen. Weil alle die Beschwerden und Verluste wegfallen, denen die Tafelleim fabrikation unterliegt, so ist die Leimgallerte viel billiger als jener Tafelleim, nämlich $6\frac{1}{2}$ bis $6\frac{3}{4}$ Thaler pro Centner. Das Material dazu, Knochen, wird zum Theil aus Südamerika bezogen, Die Fabrikation von Tafelleim ist bekanntlich so sehr von äusseren Umständen abhängig, dass zum Beispiel eine Leimtafel bei günstigem Wetter in drei Tagen getrocknet sein kann, während eine andere drei Wochen dazu braucht. Ein Gewitter am Himmel, ein Nebel lässt oft ganze Sude verderben, und die Grenzen zwischen gänzlichen Verderben und blosser Verschlecterung sind höchst schwierig äusserlich erkennbar. Die Grossindustrie hat sich freilich über die Form hinweggesetzt, aber die gewöhnliche Praxis hält sich an einige Sorten Leim, die sich bewährt haben. Verarbeitet Jemand beständig dieselbe Sorte Leim aus derselben Quelle, so gewinnt er gewisse Erfahrungszahlen. Selbstverstandlich ist jeder Leimfabrikant gezwungen, seine Preise so zu stellen, dass er den Unsicherheiten in
der Erzeugung, dem Verderben und der Unmöglichkeit, im
448 Winter zu trocknen, gewisse Rechnung trägt. Künstliche
Trockenstuben geben zwar mehr Sicherheit, aber die Kosten muss doch der Consument tragen.

Die Fabrik von W. Stalling in Pieschen bietet nun den Leim in anderer Form, und zwar in einer festen Gallerte, bie der die münsame Operation der Tafeltrocknung vermieden wird. Das Produkt ist roher Knochenleim.

Es enthält keinerlei chemische Beimischungen, sondern ist noch einem eigenthümlichen Verfahren, lediglich durch Behandlung von Knochen mittelst kaltem Wasser unter Dampfdruck extrahirt, Während man bei dem Tafelleim nicht weiss, wie viel Wasser man mitkauft (selbst der glasharte trockene Tafelleim enthalt noch $12\frac{1}{2}$ procent Wasser, das man ihm im heissem Oelbade entziehen kann), ist diese Unsicherheit bei dem erwähnten Leim vermieden, Der Fabrikant garantirt das specifische Gewicht, Im vorliegenden Falle sind 10° Baumé garantirt, man hat also ein immer gleiches Material, was in grösseren Etablissments von hohem Werthe sein kann. Die Knochen sind eine der festesten Substanzen und sie

(1) K. W. Clauss Verhandl. u. Mittheil. des nieder Oesterreich. Gewerbevereins, 1870, p. 210. Polytechnisches Notizblatt, 1870, p. 87.
(2) Jahres-Bericht, 1869, p. 657.

verdanken ihre Festigkeit der Leim substanz, welche die erdigen Bestandtheile verbindet; natürlich zeigt auch der Knochenleim eine ungewöhnliche Festigkeit und es haben Vercuche, die in der Schiffsbau-Anstalt von O. Schlick angestellt wurden, gezeigt, dass geleimte Pfosten eher irgendwo zersprengt werden können, als auf der Leimfuge. Est ist daher selbstverständlich, dass ein Leim, der allen schädliichen Witterungs einflüssen beim Trocknen entzogen bleibt, der sofort aus einer, jede Gährung ausschliessen den Dampftemperatur, in hermetisch schliessende Tonnen gebracht wird und dort erstarrt, die guten Eigenschaften der Leimsubstanz kräftiger hervortreten lässt, als mancher andere, der noch mit chemischen Mitteln behufs der Bleichung u. s. w. in seinem inneren zusammenhange gestört ist. Es ist hervorzuheben, das die neue
449 Leimgallerte ganz wie der gewöhnliche Leim mit Wasser aufzukochen und je nach dem Bedürfniss jedes Gewerbes zu verdünnen ist. Bemerkenswerth ist bei diesem Leim die enorme Billigkeit. Während andere Leimsorten zu 13 vis 32 Thlr., pr. centnr (durchschnittlich zu 15 bis 17 Thlr., also pr. Pfd. mit 5 Ngr.) geliefert werden, stellt sich der Detailpreis der Leimgallerte zu 2 ngr. pr. Pfe., im, Ctr. zu $6\frac{2}{3}$ Thlr. Ist nun auch der Wassergehalt grösser so ergiebt sich doch noch ein sehr bedeutende Ersparniss um mindestens die Hälfte der Kosten. Nach vorliegenden zugnissen des Tuchfabrickanten Mörbits in Bautzen wurde, um 75 Pfd. Garn zu leimen, mit 27 Pfd. der genannten Leimgallerte, d. h. mit 54 Ngr. (noch Detail preisen) derselbe Erfolg erzielt, den 18 Pfd. gewöhnlicher Hornleim zu dem Preise von 90 Ngr. gewähren, Der Preisvortheil stellt sich also wie 3 : 5.

Reference No. 3.

Jahres-Bericht der Chemischen Technologie für 1871, von Johannes Rudolf Wagner, Leipsig, 1872, page 839, 40. Bd. XVII.

Leim.

Ueber die Leimgallerte (1) liegen fernere Mittheilungen (2) vor. Aus denselben geht hervor, dass die Leimgallerte von Wilh. Stalling in Pieschen bei Dresden sich zur Leimung des Papiers als sehr vortheilhaft erweison habe. Es hat sich dabei als zweckmässig herausgestellt, die Lösungen von vegetabilischem Leim und Leimgallerte nicht erst im Holländer, sondern schon durch vorheriges zusammenkochen zu vermischen. Diese neue Leimmethode
450 stellt sich, gegenüber mit Harzleim, um ca. die Hälfte billiger, und dabei gewinnt das Papier nicht allein in jeder Hinsicht, sondern es tritt auch eine wesentliche ersparniss bei der Stoffzusammensetzung hinzu. Man löse in einem kupfernen Kessel mit doppeltem Boden, also durch indirecten Dampf, in 200 bis 240 Pfd. kochendem Wasser 45 bis 50 Pfd. beste Soda auf und schütte behutsam

(1) Jahresbericht 1869, p. 657; 1870, p. 671.
(2) Deutsche Industrie zeitung, 1871, pg. 75.
Polytechnisches Centralblatt, 1871, pg. 662.

unter Rühren 300 Pfd. gestossenes resp. gemahlenes Harz in diese kochende Lauge. Man koche diese Mischung, nachdem das Aufschäumen vorüber ist, ruhig so lange fort bis eine vollständige Lösung des Harzes, resp. verseifung desselben eingetreten ist. Eine zeit von 3½ bis 4 Stunden ist dazu genügend und es ist Sache des Fabrikanten den richtigen Zeitpunkt an der kurz abtropfenden klaren und im heissen Wasser leicht und vollständig sich lösenden Harzmasse zu beurtheilen. Diese fertige dicke Harzmasse löse man nun nach Belieben bez. nach der Grösse der vorhandenen Gefässe, in kochendem Wasser im Verhaltniss von 1 Pfd. Harz zu 30 bis 40 Pfd. Wasser während einiger Minuten Kochen gut auf. Jetzt ist nun der geeignete zeitpunkt, um die Leimgallerte, die man vorher in kochendem Wasser (100 Pfd. Leimgallerte in ca. 300 bis 400 Pfd. kochendem Wasser) gelöst hat, der Harznatron lösung unter Rühren beizufügen; hierbei ist es jedoch unbedingt nothwendig, das diese beiden Lösungen mindestens ca. 5 bis 10 Minuten zusammen gehörig kochen. Der Leim ist nun, nochdem man denselben in ein anderes Fass durch Seib und Filz hineingegossen hat und keine Stärke verwenden will, zum Gebrauch fertig. Am geeignetsten ist es, wenn der Koch- und Lösungsprocess etwas erhöht auf einem Podest, etc., stattfindet, um die Leimlösung bequem in die unten auf dem Fussboden zur Aufnahme des fertigen Leimes befindlichen Fässer durch Sieb und Filz zu befördern. Die zutheilung von Stärke geschieht wie üblich und am besten so, dass der in
451 dem untern Fasse befindliche gemichste fertige Leim nochmals durch ein directes Dampfrohr zum Kochen gebracht und die in lauem Wasser angerührte Stärke dann durch ein feines Sieb der kochenden Leimlösung schnell beigefügt wird, worauf eine sofortige Wegnahme des Dampfes stattzufinden hat, Der sich bildene Schaum wird möglichst entfernt. Die Mengenverhaltnisse von vegetabilischem und animalischem Leim pro Kanne oder Eimer werden am geeignetsten so genommen, dass auf den Eimer (40 Pfund Wasserinhalt) 1 bis 1½ Pfund Harzleim und 1 Pfund Leimgallerte oder auch gleiche Theile genommen werden. Stärke wird nach Belieben zugesetzt, pro Eimer ½ bis 1 Pfund oder auf den Eimer 1 Pfund Harzleim und 2 Pfund Leimgallerte und keine Stärke. Die zutheilung dieses Leimes, wie der schwefelsauren Thonerde zum Stoff, findet in der üblichen Weise statt und ist es (je nach Umständen) vorlheilhaft, auf das Pfund trocknen gedachten Leim 1¼ bis 1½ Pfund schwefelsaure Thonerde zurechnen (welche die neue chemische Fabrik "Morgenstern" bei Freiberg in vorzügleicher Qualität zu mässigem Preis liefert.

Reference No. 4.

Chemisch-technisches Repertorium von Dr. Emil Jacobsen, 1869 Zweites Halbjahr. Berlin, 1870, page 49.

Leimgallerte. Die Fabrik von W. Stalling in Pischen fertigt seit einiger Zeit Leim in Form einer festen Gallerte, von bestimmten Leimgehalt (spec. Gew. 10° Bé) und grosser Billigkeit (pro Centner

6⅔ Thalers.) Der Vortheil dieser Gallerte vor Tafelleim besteht darin, dass das Fabrikat immer gleichmässig ausfällt, während das Trocknen des Tafelleims, bei ungünstigem Wetter vorgenommen, die Quantität des Leims bedeutend verschlechtert.

452 Polytechnisches Centralblatt von Schnedermann und Böttger, p. 1117.
Wieck's illustrirte deutsche Gewerbezeitung, p. 272.
Schweizerisches Polytechnisches Zeitschrift von Bolley, p. 82.
Bayrisches Gewerbezeitung, p. 76.
Polytechnisches Notizblatt von Böttger, p. 323.
Industrie blätter; von Hager und Jacobsen, 1870, p. 59.

Reference No. 5.

Chemisch-technisches Repertorium von Dr. Emil Jacobsen.

1870. Erstes Halbjahr. Berlin, 1870, p. 79.

Anwendung der Leimgallerte zur Leimung des Maschinenpapieres.

Rudel empfiehlt die Repertorium, 1869, II., p. 49, erwähnte Leimgallerte der Fabrik von W. Stalling, in Pieschen als ganz Besonders zur Leimung des Maschinenpapieres geeignet. Nöthig ist, den Leim in die Stoffmühlen unmittelbar nach der Harzseife (harzsaures Natron) zu bringen, damit bei der Vermischung der schwefelsaures Thonerde mit der Leimgallerte sich ⅓ schwefelsaures Thonerde bilde, Erstere, bis auf 10° Baume eignedamft, braucht auf 1 Pfund circa ⅜ Pfund schwefelsaures Thonerde. Centralbatt für die Papierfabrik, p. 19.

453 *Reference No.* 6.

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LEIPSIG.

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Bayrisches Industrie und Gewerbeblatt, München, 1869, p. 60.

S. 219.

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Deustche Industrie Zeitung, Chemnitz, 1869, p. 166.

454 S. 348.

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Wieck's deutsche illustrirte Gewerbezeitung. Berlin, 1869, p. 272.

Schweizerische Polytechnische Zeitschrift. Winterthur, 1869, p. 82.

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Rentsch; Stalling's Leimgallerte, ihre Billigkeit und sonstigen Vortheile. Polytechnisches Centralblatt, Leipsig, 1869, p. 1117. Gewerbezeitung, organ für die Interessen des bayerischen Gewerbstandes, Nürnberg, 1869, p. 76.

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Herausgegeben von Bruno Kerl.

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455 Schweizerische Polytechnisches Zeitschrift Winterthur, 1869, p. 82.

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Gewerbezeitung, Organ für die Intressen des bayrischen Gewerbestandes Nürnberg, 1869, p. 76.

III. Die Leimgallerte der W. Stallingschen Fabrik in Pieschen bei Dresden.

Breslauer Gewerbeblatt, Breslau, 1870, p. 3.

Das deutsche Wollen-Gewerbe, Grunberg in Schleswig, 1870, p. 3.

Gewerbeblatt aus Württemberg, Stuttgart, 1870, p. 321.

IV. Clauss, Ueber Leimgallerte, Wieck's deutsche illustrirte Gewerbezeitung, Berlin, 1870, p. 50.

Testimony of Charles W. Cooper Before Joseph Gutman, Jr., Examiner.

NEW YORK, *April* 5, 1888.

Present: C. C. Beaman, Esq., for defendant; Edwin M. Felt, Esq., and Samuel C. Reed, Esq., for plaintiff.

CHARLES W. COOPER, a witness of lawful age, produced on the part of the defendant, having been first duly cautioned and sworn to testify to the truth, the whole truth, and nothing but the truth in the matter of controversy herein, and being examined by Mr. BEAMAN, counsel for defendant, deposes and says as follows:

Q. 1. What is your name, residence, and occupation?

A. Charles W. Cooper; my residence is No. 60 Orient avenue, Brooklyn.

Q. 2. What is your occupation?

A. Glue manufacturer.

456 Q. 3. Under what name or firm do you manufacture?

A. Peter Cooper's glue factory.

Q. 4. What, if any, relation are you to the late Peter Cooper?

A. Nephew.

Q. 5. How long have you been engaged in the business of glue manufacturing?

A. I should think about thirty-five years.

Q. 6. State in a short and concise way the usual process of making glue—not with the details of manufacture, but the general process.

A. Hides, scraps of hide, and sinews, &c., are, after being limed and the lime removed, boiled, and then the product may be evaporated or not. It is then cooled until it forms a jelly. The jelly is then sliced and dried on nets. That completes the process.

Q. 7. Is the dried glue then the general dried glue of commerce?

A. It is.

Q. 8. What is the object of boiling these scraps and sinews?

A. In order to dissolve them to form jelly or glue.

Q. 9. Is gelatine and glue in that sense one and the same thing?

A. Yes.

Q. 10. What is the proportion of glue in the jelly or gelatine when it is allowed to cool?

A. It may be from ten to thirty-five per cent.; it is perhaps about ten to thirty-five per cent.

Q. 11. Of glue?

A. Yes.

Q. 12. And the balance is what?

A. Water.

Q. 13. Then the object of drying glue is simply to evaporate the percentage of water and to leave the percentage of glue, is it not?

A. That is all, as I understand it.

457 Q. 14. And the hard glue is reduced to a form for using, is it not, by adding water to it and thus redissolving it?

A. Yes, sir.

Q. 15. Is the glue dried for any purpose that you know except so that it may be more conveniently and more economically transported and kept from deteriorating?

A. No other purpose that I can think of at present.

Q. 16. Is the quality of the glue for using in any way improved by its having been dried?

A. It is not.

Q. 17. State whether or not it has been known by you for, say, more than twenty years that glue of a certain consistency that had never been dried was useful for doing anything that could be done with glue of the same consistency that had been made by remelting or dissolving hard glue?

A. I have always supposed it was the same thing.

Cross-examination by Mr. FELT:

X Q. 18. Mr. Cooper, you speak of liming the scraps or pieces of hide. Why is that done?

A. Well, we find that it improves the product.

X Q. 19. In what way?

A. The scraps are not all limed by us.

X Q. 20. In what way does it improve the product?

A. I don't know that I can answer.

X Q. 21. Do you know why it is done?

A. Because we find—I can only say because we find an improvement in the product.

X Q. 22. You find an improvement which you cannot specify?

A. I cannot specify it.

X Q. 23. Why does it improve the product?

A. I cannot tell.

X Q. 24. What does the liming do to the scraps?

A. It makes them more soluble.

458 X Q. 25. Anything else?

A. It may make the product lighter in color.

X Q. 26. Can you make just as good glue from scraps without liming them as by liming them?

A. Well, I can't answer that. I said we limed them to improve the product; I can't answer any further.

X Q. 27. And how long have you been engaged in the glue manufacture?

A. Thirty-five years.

X Q. 28. Have you been liming scraps during all that time?

A. Have we what?

X Q. 29. Have you in the manufacture of glue been liming your scraps during all that time?

A. Some of them.

X Q. 30. During the whole period?

A. Some of them, yes.

X Q. 31. You have been doing that and cannot state now the reason why it is done?

A. I cannot state any more definitely than I have.

X Q. 32. Then as far as you know it is an entirely useless process?

A. I won't say that.

X Q. 33. What change is effected by drying the glue on nets and slicing it as you have testified?

A. It simply dries the water out.

X Q. 34. Nothing else?

A. No other change that I know of.

X Q. 35. Is that an additional expense?

A. Yes, it costs something.

X Q. 36. Then the soup or liquid glue, with the exception of its containing more water than dried glue, is in just as good a condition for commercial use as when dried; is that a fact?

A. Well, the question is rather indefinite. For commercial use, you know, it is not in condition at all, if by commercial use you mean the uses of transportation. If you mean the uses of
459 manufacture, it is not in any condition at all to be used when dried.

X Q. 37. You have stated that by liming the scraps you obtain a better product. In what respect is the product better than when made from the scraps which are not limed?

A. It is ordinarily stronger and lighter in color.

X Q. 38. Any other qualities suggest themselves to you?

A. Nothing that I can mention just now.

X Q. 39. Do you give attention to the details of the glue manufacture of the factory?

A. How is that? That's another indefinite question. Not the minute details of the factory.

X Q. 40. But you think you are familiar with all the different processes and stages of manufacture?

A. Yes, sir.

Redirect examination.

By Mr. BEAMAN:

Q. —. Can you, by taking scraps from the tanners and putting them into kettles or caldrons and adding water to them and boiling them, obtain glue?

A. Yes.

Q. 42. Have you yourself made glue in practically that way?

A. Yes.

Q. 43. How long ago?

A. Oh, we may have made some occasionally within a few years.

Q. 44. Wasn't it the custom as you learned in the business for

your immediate predecessors to make glue in that way by the application of direct fire under the kettles, and with scraps of that kind?

A. I have heard my father say that he boiled them by fire.

Q. 45. And from the use of tanners' scraps?

460 A. Well, I don't know about that—that is, they were tanners' scraps, of course, but whether they came dried or not I don't know.

(Objected to as hearsay.)

Q. 46. Can you make glue in the same way from sinews or from the boiling of hoofs and feet of animals?

A. You can't make any glue from hoofs.

CHARLES W. COOPER.

Testimony of John D. Rockefeller Before Joseph Gutman, Jr., Examiner.

NEW YORK, *April* 6, 1888.

Present: C. C. Beaman, Esq., for defendant; Edwin M. Felt, Esq., and Samuel C. Reed, Esq., for plaintiff.

JOHN D. ROCKEFELLER, a witness of lawful age, produced on the part of the defendant, having been first duly cautioned and sworn to testify to the truth, the whole truth, and nothing but the truth in the matter of controversy herein, and being examined by Mr. BEAMAN, counsel for defendant, deposes and says as follows:

Q. 1. What is your name, residence, and occupation?

A. John D. Rockefeller; residence, New York; occupation, oil-refining.

Q. 2. What, if any, relation have you to The Standard Oil Company of Ohio, the defendant in this case?

A. I am the president.

Q. 3. What, if any, relation did you have to that company in the years 1873 and 1874?

A. I was the president.

461 Q. 4. Have you read the testimony of Edward W. Leggett, the plaintiff herein, so far as it relates to certain conversations and to correspondence between the Standard Oil Company and himself and between you and Colonel Payne and Mr. Flagler and himself?

A. I have.

Q. 5. What is your memory in regard to the facts therein stated?

A. I have no recollection whatever of anything of the kind.

Q. 6. Has search been made in the office of the company to find the letters which are therein referred to as having been written by Mr. Leggett to the officers of the company or to the company?

A. A careful search has been made.

Q. 7. Have you been able to find any of them?

A. We have not.

Q. 8. You have seen Mr. Leggett before, who is here present?
A. I have.
Q. 9. What was the custom of the Standard Oil Company at that time and since then in regard to any contracts with individuals about any matters of business?

Objected to as immaterial.

A. Put them in writing; that is the way our contracts were made.
Q. 10. Did you in behalf of the Standard Oil Company make any contract in writing or otherwise with Mr. Leggett?
A. I did not.
Q. 11. With reference to any secret or invention of his?
A. I did not.

Cross-examination by Mr. FELT:

X Q. 12. When you say, Mr. Rockefeller, that you have no recollection whatever of anything of the kind transpiring between
462 Mr. Leggett and yourself as testified to by him, do you mean to be understood as denying that any such conversations took place or merely that you do not recollect them?
A. I have no recollection whatever of anything of the kind, and it was a perfect surprise to me when a very few days ago I was called upon by Mr. Wheeler for testimony in this matter.
X Q. 13. Do you recollect being on the train running from Saratoga Springs to Schenectady on the occasion testified to by Mr. Leggett?
A. I do not; I read that in his testimony; I do not.
X Q. 14. And in that respect your mind is a perfect blank, is it?
A. I have no recollection of any such interview at all.
X Q. 15. And the same as to all the other occurrences which Mr. Leggett has testified took place when you were present?
A. I have no recollection of them at all. It was a perfect surprise to me when they were called to my attention recently.
X Q. 16. Do you remember whether Mr. Leggett was ever in the employ of the Standard Oil Company of Ohio?
A. I do not.
X Q. 17. Do you recollect seeing him at the office of the company in Cleveland?
A. Oh, yes; I have seen him there—I have seen Mr. Leggett.
X Q. 18. What do you recollect he was there for?
A. Well, I could not remember now what he was there for. I think Mr. Leggett used to represent a New York firm in the selling of glue.
X Q. 19. Do you recollect that Mr. Leggett was at the offices of the company in Cleveland about the dates that he has testified that he was there?
A. I don't; I don't remember anything about that.
463 X Q. 20. And if such occurrences took place they have entirely passed out of your mind?
A. In respect to his services, if employed by our company, it

would probably have been by the head of some department of the business. Mr. Leggett would know himself if he had been in our employ in whatever department. If he claims to have been in our employ in any position as salesman that would be known to the head of that department. If he was selling the oil that would be known to Mr. Hutchins or some gentleman having charge of that department, and would be a matter that I would not necessarily know about.

X Q. 21. I do not understand you to say, Mr. Rockefeller, that the occurrences testified to by Mr. Leggett as having taken place in your presence did not occur, but simply that you have no recollection of them.

A. I say that I have no recollection whatever of anything of the kind, and do not believe they did occur.

Redirect examination by Mr. BEAMAN:

Q. 22. Has your company, since 1874, been aware or have you been aware that in the gluing of barrels with glue that you yourselves had made you were violating any contract, either verbal or written, with Mr. Leggett?

A. Oh, none whatever; as I say to you, this is entirely a new thing to me; a matter of great surprise, too.

Recross-examination by Mr. FELT:

X Q. 23. Did you know or had you ever heard, Mr. Rockefeller, that Mr. Leggett had a patent process for gluing the inside of barrels?

A. I do not recall anything of the kind.

JOHN D. ROCK-FELLER.

464 *Testimony of O. H. Payne Before Joseph Gutman, Jr., Examiner.*

NEW YORK, *April* 6, 1888.

Present: C. C. Beaman, Esq., for defendant; Edwin N. Felt, Esq., and Samuel C. Reed, Esq., for plaintiff.

OLIVER H. PAYNE, a witness of lawful age, produced on the part of the defendant, having been first duly cautioned and sworn to testify to the truth, the whole truth, and nothing but the truth in the matter of controversy herein, and being examined by Mr. BEAMAN, counsel for defendant, deposes and says as follows:

Q. 1. What is your name, residence, and occupation?

A. Oliver H. Payne; New York; I haven't any occupation at present.

Q. 2. What relation did you bear to the Standard Oil Company of Ohio in the years 1873 and 1874?

A. I was treasurer of the company.

Q. 3. Do you know Edward W. Leggett here present, the plaintiff in this case?

A. Yes.

Q. 4. Did you know him in those years, 1873 and 1874?

A. Yes, sir.

Q. 5. Have you ever read his testimony so far as it relates to certain conversations between himself and you and Mr. Rockefeller and Mr. Flagler in regard to some secret that he had with reference to the gluing of barrels?

A. I have.

465 Q. 6. And also have you seen copies of the correspondence or letters which he claims to have written to the Standard Oil Company?

A. Yes.

Q. 7. Has search been made by the officers of the company to find such letters?

A. I have been so informed; I have no way of knowing personally; I am not connected with the company at present.

Q. 8. Was it the habit of the company at the time you were its treasurer to file away all letters received?

A. Yes, sir; absolutely.

Q. 9. Every one?

A. Yes, sir.

Q. 10. Where is Mr. Flagler who is referred to in this testimony?

A. He is in Florida.

Q. 11. What is his name?

A. Henry M. Flagler.

Q. 12. What, if any, recollection have you, Col. Payne, with reference to the transactions as to which Mr. Leggett has testified as having taken place between yourself and him and the other gentlemen?

A. I have not any whatever. I do not remember any such interviews as are referred to in those letters.

Q. 13. In those letters or in that testimony?

A. Yes; in that testimony.

Q. 14. Has the Standard Oil Company of Ohio directly or indirectly had any contract that you are aware of either in writing or oral with Mr. Leggett with reference to the use of any secret process of his for the gluing of barrels or with reference to the use of any patent of his with regard to the gluing of barrels?

A. None whatever that I can remember.

Cross-examination by Mr. FELT:

X Q. 15. Mr. Payne, do you recollect having any conver-
466 sation with Mr. Leggett about the time stated by him that they took place at the offices of the Standard Oil Company?

A. I do not recall any.

X Q. 17. Do you recollect ever seeing him in the offices of the Standard Oil Company, in Cleveland?

A. Yes; as I remember, he was employed by Mr. Hutchins to sell oil, and I saw more or less of him with Mr. Hutchins in that department and knew of him and saw him.

X Q. 18. Do you recollect writing a note to Mr. Leggett?

A. I do not, but I have seen that letter, and I think very likely that I wrote that letter. I don't remember the circumstances.

X Q. 19. Can you say in response to what you wrote that letter?

A. No, sir.

X Q. 20. And you cannot say what the information was that he desired from you?

A. No, sir; I have no recollection whatever.

X Q. 21. But you won't say that he had not applied to you for certain information, will you?

A. No, sir; I cannot say that. I undoubtedly wrote that letter, but what it was in reply to I haven't any idea.

X Q. 22. Then, so far as you know, the interviews may have taken place just as he has testified, but you do not recollect?

A. I have no remembrance of such interviews.

X Q. 23. You will say that you did write the letter which is signed by you?

A. I do not know any reason why I should not say so. I do not remember the letter, but I have no doubt that I wrote the letter from what has been told me with reference to it.

X Q. 24. Did you know or had you heard that Mr. Leggett had obtained or was about to obtain a patent for the process?

A. No, sir; I have no remembrance of it whatever.

467 X Q. 25. Do you recollect Mr. Plumer?

A. Yes, sir.

X Q. 26. Do you recollect having any conversation with Mr. Plumer with reference to any process—any patent process—which any person had for lining the inside of oil barrels?

A. No, sir; no recollection of anything of the kind.

X Q. 27. And if Mr. Plumer has testified or should testify that you or any officer of the Standard Oil Company of Ohio in your presence mentioned that fact to him in conversation what would you say?

A. I could only say that I do not remember anything with reference to it.

X Q. 28. Who was the secretary of the company at that time?

A. Mr. Flagler. I was the treasurer and Mr. Rockefeller was the president.

O. H. PAYNE.

Counsel for defendant offers in evidence the letter produced on cross-examination of Edward W. Leggett, and the same is marked Defendant's Exhibit E.

DEFENDANT'S EXHIBIT FILE-WRAPPER OF ORIGINAL PATENT.

Petition.

Hon. M. D. Leggett, Commissioner of Patents.

SIR: Your petitioner, a resident of the United States, prays that letters patent may be granted to him for the invention set forth in

the annexed specification, vesting in him and his legal representatives the exclusive right to the same upon the terms and conditions expressed in the act of Congress in that case made and provided.

468 And further prays that you will recognize Leggett & Leggett, of Washington, D. C., as his attorneys, with full power of substitution and revocation, to prosecute this application, to make alterations and amendments therein, to receive the patent, and to transact all business in the Patent Office connected therewith.

EDWARD W. LEGGETT.

Specification describing an improved process of coating or lining the inside of barrels, casks, &c., for the purpose of rendering the same impervious to water, oil, or any contained substance, invented by Edward Wright Leggett, of the city, county, and State of New York.

This invention relates to that class of processes employed for the coating or lining of the inside of barrels for the above-mentioned purpose, and consists in preparing from any suitable glutinous substance glue, said glue being permitted to attain but a certain consistency and then applied directly as a coating or lining. In carrying out my invention I proceed as follows:

Take any of the materials from which glue may be made and proceed in the usual or any suitable manner for the manufacture of glue until the soup has attained a certain consistency. This consistency must be considerably less than that which is required wherein semi-fluid, solid, or cake glue is to be produced, and while it is in this half-finished state, so to speak, it is applied directly to the inside of the barrel or cask, where, after due evaporation, it will be found that said cask or barrel is lined thoroughly and completely with glue, inasmuch as a pressure of steam generated by the heat applied is sufficient to force the thin glutinous fluid well into the pores and recesses of the wood, thus insuring a perfect lining.

I am aware that barrels, &c., have been lined or coated
469 with glue, when said glue has been subjected to a process of reduction by dilution from its original consistency to a sufficiently liquid state. But I am not aware of any process wherein the glutinous material has been permitted to attain only its proper consistency and then applied directly, thus saving the time, labor, and expense heretofore employed by continuing the manufacture of the glutinous soup until it has attained a semi-fluid or gelatinous consistency, thus necessitating a reduction by dilution and reheating before it is fit for application as set forth in this specification, traveling over, as it were, the same ground backward and forward two or three times, whereas by my process this trouble is entirely dispensed with by operating as within described.

This invention has nothing to do with the glue-lined barrel as an article of manufacture, but relates particularly to a new and inexpensive process of constructing a glue-lined barrel, cask, &c.

Heretofore the glue has been taken in its complete state as an

article of manufacture, has been reheated, diluted, and then applied; but such a process necessarily carries with it all the expense of preparing the glue at first as an article of trade or commerce. My process contemplates taking the glue when at a proper consistency and, applying it to the inside of the package, permitting it to harden for the first time upon that surface.

I claim as my invention:

The within-described process of coating or lining the inside of barrels, casks, &c., with glue, wherein the glutinous material, instead of being produced by reduction from a previously solid state, is permitted to attain only a certain liquid consistency, and is then applied to the package and permitted to harden thereon for the first time, substantially as herein set forth and described.

470 In testimony that I claim the foregoing I have hereunto set my hand and seal this 16th day of September, 1873.

EDWARD W. LEGGETT.

Two witnesses:
LEVERETT L. LEGGETT.
EDM. F. BROWN.

Oath.

DIST. OF COLUMBIA, } ss:
County of Washington, }

I, Edward Wright Leggett, resident of the United States, do solemnly swear that I verily believe myself to be the original and first inventor of the within-described improvement in the process of lining barrels, casks, &c., with glue, and that I neither know nor believe that the same was ever before known *nor* used, and that I am a citizen of the United States.

EDWARD W. LEGGETT.

Sworn to and subscribed before me, an officer duly qualified to administer oaths, this 16th day of September, 1873.

EDM. F. BROWN,
[L. S.] *Notary Public.*

(Endorsed:) In the U. S. Patent Office. In the matter of the application of Edward W. Leggett, New York city, N. Y., for letters patent for improved process of lining the inside of barrels, casks, &c. Petition, oath, specification, and power of attorney. Patent Office U. S. A., Sep. 29, 1873.

U. S. Patent Office.
Application of E. W. Leggett.
Filed Sept. 29, 1873.
Contents of this file.
Application.

471 *Memorandum of Fee Paid at U. S. Patent Office.*

Inventor,
Edward W. Leggett.
Invention,
Process coating barrels.
Date of payment,
Oct. 14,'73.
Final fee,
$20.
Solicitors,
Leggett & Leggett.
Send pat. to
Edw. W. Leggett,
301 Pearl St.,
New York city, N. Y.

1873. Hedrick. 19572.

No. 143,770.
Edward W. Leggett,
Of New York,
County of " "
State of " "
Lining barrels, casks, &c.
Rec'd Sept. 29, 1873.
Petition, " " "
Affidavit, " " "
Specification, " " "
Drawing, } Not required.
Model, }
Cert. dep., —.
Cash, $15, Sept. 29, 1873.
Add'l fee cert., —.
" " cash, $20, Oct. 15, 1873.
Examined Oct. 1,'73. B. S. Hedrick.
Issue, Oct. 2,'73. H. M. Cormick.
Patented Oct. 21, 1873.
Recorded vol. —, page —.
Circular, Oct. 2, 1873.
Leggett & Leggett, present.
(Improvement in process of lining oil barrels with glue.)

Application for reissue filed Feb'y 2, 1874.
Reissued March 10, 1874.
No. 5785.

472 DEFENDANT'S EXHIBIT FILE-WRAPPER OF REISSUED PATENT.

To the Commissioner of Patents:

Your petitioner, of New York, State of New York, prays that he may be allowed to surrender the letters patent for an improvement in the process of lining oil barrels with glue granted to him on the 21st day of October, 1873, whereof he is now sole owner, and that

letters patent may be reissued to him for the same invention upon the annexed specification.

EDWARD W. LEGGETT.

He further prays that Burridge & Co., of Cleveland, Ohio, or their associate, may be recognized as his attorneys with full and complete power to transact all business relating to this application, and that letters patent, when granted, be forwarded to said Burridge & Co.

EDWARD W. LEGGETT.

To all whom it may concern:

Be it known that I, Edward W. Leggett, of the city, county, and State of New York, have invented an improved mode of coating or lining the inside of barrels, casks, &c., for the purpose of rendering the same impervious to hydrocarbon oil or any equivalent material, and thereby improving the barrels, &c., for the purposes designed, of which the following is a specification.

This invention relates to the mode employed for that of coating or lining the inside of barrels, casks, &c., thereby improving the same for the above-mentioned purpose, and consists in preparing from any glutinous substance glue soup, said soup being permitted to attain but a certain consistancy and then applied directly as a coating or sizing.

473 In carrying out my invention I proceed as follows: Take any of the materials from which glue may be made and proceed in the usual or any suitable manner for the manufacture of glue until the soup has attained a certain consistency.

This consistancy must be considerably less than that which is required whereby semi-fluid, solid, or cake glue is to be produced, and while it is in this half-finished state, so to speak, it is applied directly to the inside of the barrel or casks, where, after due evaporation, it will be found that said cask or barrel is lined thoroughly and completely with the material, inasmuch as the pressure of steam generated by heat applied is sufficient to force the thin glutinous fluid or soup well into the pores, fibres, and recesses of the wood, thus insuring a perfect lining.

I am aware that barrels, &c., have been lined or coated with glue of commerce when said glue has been subjected to a process of reduction by dilution from its original consistancy to a sufficiently liquid state, but I am not aware of any process wherein the glutinous material has been permitted to attain only its proper consistancy for the purpose specified and then applied directly, thus saving the time, labor, and expense heretofore employed, by continuing the manufacture of the gelatinous soup until it has attained a glutinous condition, thus necessitating a reduction by dilution and reheating before it is fit for application, as set forth in this specification, traveling over, as it were, the same ground backward and forward two or three times, whereas by my process this trouble is entirely dispensed with by operating as within described.

This invention has nothing to do with the ordinary glue-lined barrel, but relates to a new and inexpensive mode or process of

making barrels, casks, &c., better adapted to the purpose designed by coating or sizing as set forth than by the ordinary means.

474 Heretofore glue has been taken in its completed state as an article of manufacture, reheated, diluted, and then applied, but such a process necessarily carries with it all the expense of preparing the glue at first as an article of trade or commerce.

Insert "A" per am'd't Feb. 27, 1874.

My process contemplates taking the said soup when at a proper consistency and applying it to the inside of the package, permitting it to harden for the first time upon that surface.

Claim.

What I claim as my invention and desire to secure by letters patent is—

The within-described process of coating or lining the inside of barrels, casks, &c., wherein the glutinous material, instead of being produced by reduction from a previously solid state, is permitted to attain only a certain liquid consistency, and is then applied to the package and permitted to harden thereon for the first time, substantially as herein set forth and described.

Insert "B."

2. I claim a barrel, cask, &c., coated or sized by the material and by the mode or process substantially as herein described.

EDWARD W. LEGGETT.

Witnesses (two req'd):
C. W. REED.
A. F. CORNELL.

COUNTY OF CUYAHOGA, *State of Ohio*, } ss:

Edward W. Leggett, the above-named petitioner, being duly sworn, deposes and says that he verily believes that by reason of an insufficient or defective specification his aforesaid letters patent are inoperative or invalid; that the said error has arisen from in-

475 advertence, accident, or mistake and without any fraudulent or deceptive intention, to the best of his knowledge and belief; that he is sole owner of said letters patent, and that he varily believes himself to be the first and original inventor of the improvement set forth and claimed in this amended specification.

EDWARD WRIGHT LEGGETT.

Sworn to and subscribed before me this 19th day of January, one thousand eight hundred and seventy-four.

J. H. BURRIDGE,
[L. S.] *Notary Public.*

(Endorsed:) Patent Office, U. S. A., Jan. 24, 1874. Patent Office, U. S. A., Feb. 2, 1874.

No. 143,770.

THE UNITED STATES OF AMERICA.

To all to whom these presents shall come:

Whereas Edward W. Leggett, of New York, New York, has presented to the Commissioner of Patents a petition praying for the grant of letters patent for an alleged new and useful improvement in process of lining oil barrels with glue, a description of which invention is contained in the specification, of which a copy is hereunto annexed and made a part hereof, and has complied with the various requirements of law in such cases made and provided; and whereas upon due examination made the said claimant is adjudged to be justly entitled to a patent under the law: Now, therefore, these letters patent are to grant unto the said Edward W. Leggett, his heirs or assigns, for the term of seventeen years from the twenty-first day of October, one thousand eight hundred and seventy-three,
476 the exclusive right to make, use, and vend the said invention throughout the United States and the territories thereof.

In testimony whereof I have hereunto set my hand and caused the seal of the Patent Office to be affixed, at the city of Washington, this twenty-first day of October, in the year of our Lord one thousand eight hundred and seventy-three, and of the Independence of the United States of America the ninety-eighth.

[Seal of U. S. Pat. Office.]

B. R. COWAN,
Secretary of the Interior.

Countersigned:
M. D. LEGGETT,
Commissioner of Patents.

UNITED STATES PATENT OFFICE.

EDWARD W. LEGGETT, of New York, N. Y.

Improvement in Processes of Lining Oil Barrels with Glue.

Specification forming part of Letters Patent No. 143,770, dated October 21, 1873. Application filed September 29th, 1873.

To all whom it may concern:

Be it known that I, Edward Wright Leggett, of the city, county, and State of New York, have invented an improved process of coating or lining the inside of barrels, casks, &c., for the purpose of rendering the same impervious to water, oil, or any contained substance, of which the following is a specification:

This invention relates to that class of processes employed for the coating or lining of the insides of barrels for the above-mentioned purpose, and consists in preparing from any suitable glutinous
477 substance glue, said glue being permitted to attain but a certain consistency and then applied directly as a coating or lining.

In carrying out my invention I proceed as follows: Take any of the materials from which glue may be made and proceed in the usual or any suitable manner for the manufacture of glue until the soup has attained a certain consistency.

This consistency must be considerably less than that which is required wherein semi-fluid, solid, or cake glue is to be produced, and while it is in this half-finished state, so to speak, it is applied directly to the inside of the barrel or cask, where, after due evaporation, it will be found that said cask or barrel is lined thoroughly and completely with glue, inasmuch as a pressure of steam generated by the heat applied is sufficient to force the thin glutinous fluid well into the pores and recesses of the wood, thus insuring a perfect lining.

I am aware that barrels, &c., have been lined or coated with glue when said glue has been subjected to a process of reduction by dilution from *from* its original consistency to a sufficiently liquid state, but I am not aware of any process wherein the glutinous material has been permitted to attain only its proper consistency and then applied directly, thus saving the time, labor, and expense heretofore employed by continuing the manufacture of the glutinous soup until it has attained a semi-fluid or gelatinous consistency, thus necessitating a reduction by dilution and reheating before it is fit for application, as set forth in this specification, traveling over, as it were, the same ground, backward and forward, two or three times, whereas by my process this trouble is entirely dispensed with by operating as within described.

This invention has nothing to do with the glue-lined barrel as an article of manufacture, but relates particularly to a new and inexpensive process of constructing a glue-lined barrel, cask, &c.

478 Heretofore the glue has been taken in its complete state as an article of manufacture, has been reheated, diluted, and then applied, but such a process necessarily carries with it all the expense of preparing the glue at first as an article of trade or commerce.

My process contemplates taking the glue when at a proper consistency and applying it to the inside of the package, permitting it to harden for the first time upon that surface.

I claim as my invention:

The within-described process of coating or lining the inside of barrels, casks, &c., with glue, wherein the glutinous material, instead of being produced by reduction from a previously solid state, is permitted to attain only a certain liquid consistency and is then applied to the package and permitted to harden thereon for the first time, substantially as herein set forth and described.

In testimony that I claim the foregoing I have hereunto set my hand this 16th day of September, 1873.

EDWARD W. LEGGETT.

Witnesses:

LEVERETT L. LEGGETT.

EDM. F. BROWN.

(Endorsed:) Patent Office, U. S. A., Jan. 24, 1874.

40—225

THE UNITED STATES PATENT OFFICE.

To all persons to whom these presents shall come, Greeting:

This is to certify that careful search has been made of the digest of this office and no assignment, agreement, license, power of attorney, or other instrument of writing is found of record under or relating to letters patent granted to Edward W. Leggett, No.
479 143,770, dated October 21, 1873, for "process of lining oil barrels with glue."

In testimony whereof I, J. M. Thacher, acting Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed this twenty-third day of January, in the year of our Lord one thousand eight hundred and seventy-four, and of the Independence of the United States the ninety-eighth.

J. M. THACHER,
[SEAL.] *Acting Commissioner.*

(Endorsed:) Patent Office, U. S. A., Jan. 24, 1874.

Memorandum of Fee Paid at U. S. Patent Office.

Serial No. —.

Inventor,
E. W. Leggett.
Name of invention as allowed,
Process of lining oil barrels with glue.
Date of payment, ——.
Fee, reissue, $30; enclosed d'f't.
Solicitors,
Burridge & Co., Cleveland, Ohio.

(Endorsed:) Patent Office, U. S. A., Jan. 24, 1874.

ROOM 16, U. S. PATENT OFFICE,
WASHINGTON, D. C., *Jan'y* 27, 1874.

Messrs. Burridge & Co., Cleveland, Ohio.

Papers returned for two witnesses to applicant's signature to his specification.

For Comm'r:

J. D. POLK.

480 Examiner's Room 151.

No. 1. 20058.

U. S. PATENT OFFICE,
WASHINGTON, D. C., *Feb'y* 6, 1874.

Edward W. Leggett, care Burridge & Co., Cleveland, Ohio.

Subject: "Processes for lining oil barrels with glue." Filed Feb'y 2d, 1874.

The second claim in this application is rejected for the reason that a barrel coated by the process described has no features or

characters to distinguish it from a barrel coated with glue as prepared in the ordinary way.

B. S. HEDRICK, *Examiner.*

(Endorsed:) Rej. 1, Feb'y 6, 1874.

WASHINGTON, *Feb.* 27, '74.

Hon. Com'r of Patents.

SIR: In view of official action on the reissue case of E. W. Leggett, filed Jan'y 2, '74, relating to lining oil barrels with glue, we amend the case by inserting on page 4, after line 5, the following, viz:

A. The distinguishing feature of this improvement may be found on examination to be the superior integrity of the lining by the use of soup glue; by its peculiar character it is more freely absorbed by the wood penetrating into fibre deeper than by the ordinary mode. Hence the sizing or coating is not only upon the surface, but penetrates into the wood, thereby presenting a thicker covering to the action of the oil, and this sizing is not liable to be broken off or cracked in handling the cask, as part of the coating is absorbed into the fibre and cells of the wood, which gives additional strength to it.

BURRIDGE & CO.

481 B. We further amend by inserting after the word "process," on line 7, page 5, the following:

Whereby it is absorbed into and strengthened by the wood fiber.

BURRIDGE & CO.

(Endorsed:) 3 amendment, 20058, Feb. 27, 1874. "A," "B." Patent Office, U. S. A., Feb. 27, 1874.

1874.

Reissue 20058.
No. 5785, div. 3.
Edward W. Leggett,
Of New York,
County of "
State of "
Processes of lining oil barrels with glue.
Rec'd, Jan'y 24, 1874.
Petition, " " "
Affidavit, " " "
Specification, Feb'y 2, "
Drawing (none required).
Old patent, No. 143,770, Oct. 21, 1873.
Abstract of title, Jan'y 24, 1874.
Cert. dep., —.
Cash, $30, Jan'y 24, 1874.
Examined, Feb'y 28, 1874, B. S. Hedrick.
Issue, Mar. 2, '74. Knight.
Patented, Oct. 21, 1873.

Reissued, March 10, 1874.
Recorded, vol. —, page —.
Cir. Burridge & Co., Cleveland, Ohio.

1874.

Contents.

1. Application, 5 papers.
2. Rej. 1, Feb. 6, '74.
3. Amend't, Feb. 27, 1874.

Title: Improvement in lining oil barrels with glue.
J. B. B., M. H.

482 DEFENDANT'S EXHIBIT A. J. H. T., Examiner.

LEXINGTON, *Nov.* 19, '73.

H. M. Flagler, Esq.

DEAR SIR: Yours of the 15th was duly received. In the first place I know my glue "will do" all I claim, for I have thoroughly tested it, and shall be glad to send you some for a trial. I propose to secure my discovery by letters patent, and a trade-mark, and have already taken steps to do so. I can also make it water-proof if desired.

I was thinking this morning, as you use so much glue, why not make it at your own factory. Half the cost of making glue is dry-it, all this could be saved, also freights.

Then stock could be bought at the West at a much lower price than here.

Of course you use steam, and if so, it would not cost one thousand dollars for the tubs, &c., needed. You could make your own glue for one-quarter of what you now pay, and even less, and if you so wished, could furnish other parties with glue. No skilled labor is required, with the exception of one man, and three or four men would be all needed. Why not, then, make your own glue, elastic or not, as you please? Either my son or myself will come on and take charge, set the thing moving, and stay longer or shorter, as we may agree. Both my son and myself can make any kind of glue and from any kind of stock. Also both of us fully understand the whole business in all its parts, and just what is wanted to make the business pay and to work to the best advantage.

If you wish to dry the glue for sale to other parties, by the use of my patent drying machine, we can make glue every day in the year, the amount only limited by the supply of stock.

Will you give this idea your consideration? As to myself,
483 I can furnish all the references desired, and provided you wish either the services of myself or son, believe we can agree upon the terms.

Hoping to hear from you on this subject,
I am, yours truly, WILLIAM PLUMER.

DEFENDANT'S EXHIBIT FLAGLER LETTER NO. 1.

CLEVELAND, OHIO, *Nov.* 22, 1873.

Wm. Plumer, Esq., Lexington, Mass.

DEAR SIR: Yours of the 19th at hand. The ideas you suggest have been under consideration some time. While we have discussed the question of making our own glue with other parties, we are not committed to any one. If you feel disposed to come and see us, we will be glad to talk the matter over with you.

Yours truly, H. M. FLAGLER,
Sec'y & Treas.

DEFENDANT'S EXHIBIT FLAGLER LETTER NO. 2.

CLEVELAND, OHIO, *Dec.* 26, 1873.

Wm. Plumer, Esq., Lexington, Mass.

DEAR SIR: Impossible to meet you in Boston. I think you had better come here at an early day, and should nothing come of the visit, we will pay expenses of the trip. We shall be busy the 5th, 6th, and 7th of January.

Before or after (not later than the 10th) will suit us.

Yours truly, H. M. FLAGLER,
Sec'y & Treas.

484 DEFENDANT'S EXHIBIT TWEDDLE PATENT OF 1866.

UNITED STATES PATENT OFFICE.

HERBERT W. C. TWEDDLE, of Pittsburg, Pennsylvania.

Improved Composition for Lining Barrels.

Specification forming part of Letters Patent No. 57016, dated August 7, 1866.

To all whom it may concern:

Be it known that I, Herbert W. C. Tweddle, of the city of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful improvement in the manufacture of glue and cement for oil and turpentine or other barrels or casks, and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention consists in an improved composition for the lining or coating of barrels designed for holding petroleum.

It is well known that petroleum is of so penetrating a nature that it cannot be confined in casks, barrels, or other wooden vessels, no matter how tightly made and carefully jointed, without considerable leakage. It is therefore necessary to line or coat the inside of the barrel or other vessel with some substance which will adhere to the wood and be insoluble by the petroleum.

Common glue is found to be admirably suited for this purpose, with the exception that it is very quickly decomposed, so that a fresh supply has to be made very frequently, which is a great inconvenience in establishments which are constantly obliged to make use of it for the purpose specified.

485 In order to overcome this difficulty and prevent the tendency of glue and other cements of which glue forms a part to decompose I add to the glue when it is being melted for the purpose of coating oil barrels a small quantity of bichloride of mercury (corrosive sublimate), which has the desired effect and enables the glue to be kept for a long time without decomposing.

What I claim as my invention and desire to secure by letters patent is—

The use of common glue or gelatine mixed with a small quantity of bichloride of mercury as a coating for the interior of barrels for holding petroleum, turpentine, and other articles.

In testimony whereof I, the said Herbert W. C. Tweddle, have hereunto set my hand.

HERBERT W. C. TWEDDLE.

Witnesses:
ALLAN C. BAKEWELL.
A. S. NICHOLSON.

Defendant's Exhibit Dietz Patent of 1868.

United States Patent Office.

Andrew Dietz, of New York, N. Y.

Improved Process of Treating Glue.

Specification forming part of Letters Patent No. 79736, dated July 7, 1868.

To all whom it may concern:

Be it known that I, Andrew Dietz, of the city of New York, in the county of New York and State of New York, have invented or discovered a new and improved process or method of treating or preparing and refining glue, and I do hereby declare that the following is a full, clear, and exact description thereof and of its mode or manner of operation.

486 My invention or discovery relates to an improved method of treating and preparing glue after it has been made in the usual manner, by means of which the cheaper and inferior kinds and qualities of glue are made equal to the better and higher grades or qualities, and also at the same time refined from impurities; and glue so treated, when prepared in a liquid or partially fluid condition, is much less liable to become sour or mold, and thereby have its adhesive quality weakened, and such prepared glue will much longer retain its fluid or semi-fluid condition.

My process or method of treating and preparing and refining glue

is substantially as follows: Of the cheaper and inferior kinds or qualities of glue I take any desired quantity and soak it in cold water until it becomes like a jelly, using for such purpose about three gills of water to the pound of glue. This operation of soaking the glue and thus converting it into a jelly is only necessary, however, when hard, dry glue is to be treated and refined. When desired or convenient the glue may be taken when hot directly from the vats in which made, and the other ingredients hereinafter mentioned immediately mixed and incorporated with it.

For a pound of the glue I then take about three ounces of rosin and about half an ounce of oil, which are heated and melted, either separately or together, and then completely and thoroughly stirred and mixed together.

Linseed oil may be used, but I prefer kerosene or some other of the hydrocarbons.

Benzine may also be made use of and incorporated with the rosin. The glue, having been soaked in cold water, as before mentioned, is then heated to the boiling point, or is taken hot from the tanks in which made, and the rosin and oil in a melted state are then poured into and mixed with the heated glue, and the whole kept
487 simmering for from five to ten minutes, the mass being also frequently stirred so that the several ingredients or substances shall be thoroughly mixed and combined with each other, after which the mass is set aside and allowed to cool and settle. The impurities deposit themselves at the bottom in the form of a sediment, and there is produced a refined and improved article of glue, equal in color and in quality to the higher grades and better by very many grades than the glue originally taken to be treated.

After having been thus treated and refined the prepared article can be made into sheets and dried like ordinary glue, or can be retained in a fluid or partially fluid condition in cans or bottles or in a soft state in boxes.

When, however, it is desired to retain it in a semi-fluid condition in cans or bottles or put it in boxes, such cans or bottles should not be corked, or the boxes tightly covered, until the article has become thoroughly cooled.

When required for use it is reduced to any consistency required by adding water to it, the addition of which renders it very light-colored, the mixture being at first almost milky in appearance.

The mixing and combining of the rosin and oil with the glue not only purifies the glue, but also has a preservative effect, preventing the glue when made liquid for use so soon becoming sour or molding, and such prepared glue will also when made thin retain its fluid condition for a much longer time than ordinary glue, the water evaporating much more slowly.

The exact proportion above mentioned of rosin and oil to each other and to the pound of glue is not material, though I have found that the combining such articles, in the proportions mentioned, is in most cases highly satisfactory and produces a very excellent and greatly improved product. The proportions of such articles will

necessarily vary somewhat, according to their condition or
488 purity, and their proportions may also be varied according to the particular use to which the product is to be applied. For instance, when the glue is designed for preparing canvas for oil-cloths and similar uses, a greater quantity of rosin can be used, and for such use I have also found linseed oil very satisfactory, though for ordinary uses I prefer to use petroleum or benzine. There should, however, in all cases be sufficient rosin and oil mixed with the glue to purify and improve the product, as described, but not enough to injure or weaken its adhesive qualities.

The mixing with this article either while being or after it has been prepared of a small quantity of carbolic or wood acid, about a teaspoonful to the gallon of glue, will more certainly prevent its molding or souring or deteriorating in quality.

What I claim as my invention and desire to secure by letters patent is—

1. Treating glue with rosin or other proper resinous substance and petroleum or hydrocarbon or fixed oils, substantially as and for the purpose set forth.

Combining with glue so treated and prepared carbolic or wood acid, substantially as and for the purposes set forth.

A. DIETZ.

Witnesses:
S. D. LAW.
FRED. B. SEARS.

489 DEFENDANT'S EXHIBIT 1.

UNITED STATES PATENT OFFICE.

NATHANIEL B. RICE, of East Saginaw, Michigan.

Improvement in Obtaining Gelatine from Bones, Horn Pith, &c.

Specification forming part of Letters Patent No. 114,602, dated May 9, 1871.

To all whom it may concern:

Be it known that I, Nathaniel B. Rice, of East Saginaw, in the county of Saginaw and State of Michigan, have invented a new and improved process of obtaining gelatine from bone, etc., and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same.

This invention relates to a new method of treating bone, horn piths, or other equivalent substances with the object of extracting therefrom the gelatine, size, and glue, as well as the phosphoric acid and phosphates, or either, as may be desired.

The invention consists chiefly in the application to the bone or similar substance of phosphoric acid, which dissolves and separates the mineral constituents, leaving the gelatinous matter free and

ready for use. The invention consists also in such a treatment of the acid charged with earthy matter that it can again be separated therefrom for further use on fresh material. The expense of the treatment is thereby greatly reduced. Finally, the invention consists in such an arrangement of the aforesaid process of separating the mineral matter from the acid that the phosphoric acid of the bone is also taken therefrom and added to the acid used
490 for original separation, so that an actual gain of acid is effected.

The following is the description of the process: The bone, horn pith, or equivalent substance is placed in diluted phosphoric acid. The earthy matter of the bone, horn pith, &c., is thereby dissolved and removed from the gelatine, which latter can be converted into size or glue or refined for table or other uses by any of the known processes. The acid is next recovered from the earthy matter, to be used for repetitions of the same process in the following manner: About two-thirds or more of the solution of acid phosphate of lime resulting from the above process are subjected to the action of sulphurous or sulphuric acid, which precipitates the lime in the form of sulphite or sulphate, either of which can be readily removed, leaving the acid or acid phosphate, according to the amount of sulphurous or sulphuric acid used, in an available condition for further use on other bone, horn pith, &c. This process, by extracting the phosphates originally held in the bone or other similar substance treated, yields an actual surplus of phosphoric acid, so that almost fifty per cent. can be gained at each process.

The residuum from the last-described process and that part of the said solution not treated with sulphurous or sulphuric acid as aforesaid can be used for fertilizing or other purposes.

In place of the phosphoric acid alone, a combination of it with any other acid or acids in such proportions that the mixture will dissolve and remove the earthy matter in bone, horn pith, or equivalent substances may be used; but the simple phosphoric acid is more advantageous, as it acts in a satisfactory manner and may be regained as hereinbefore described.

Having thus described my invention, I claim as new and desire to secure by letters patent:

1. The process of treating bone, horn pith, or equivalent
491 substances by means of phosphoric acid, with or without other acid or acids, for the purpose of obtaining the gelatine, as set forth.

2. The herein-described method of separating and reclaiming the phosphoric acid from the solution of earthy matter by the addition of sulphurous or sulphuric acid, as set forth.

3. The process of separating the phosphoric acid added to the bone, together with that originally contained in the bone, from the earthy matter at one operation, as set forth.

NATHANIEL B. RICE.

Witnesses:
GEO[illegible]EE.
T.[illegible]

DEFENDANT'S EXHIBIT ORIGINAL LEGGETT PATENT.

UNITED STATES PATENT OFFICE.

EDWARD W. LEGGETT, of New York, N. Y.

Improvement in Processes of Lining Oil Barrels with Glue.

Specification forming part of Letter-Patent No. 143,770, dated October 21, 1873; application filed September 29, 1873.

To all whom it may concern:

Be it known that I, Edward Wright Leggett, of the city, county, and State of New York, have invented an improved process of coating or lining the inside of barrels, casks, &c., for the purpose of rendering the same impervious to water, oil, or any contained substance, of which the following is a specification.

492 This invention relates to that class of processes employed for the coating or lining of the insides of barrels for the above-mentioned purpose; and consists in preparing from any suitable glutinous substance glue, said glue being permitted to attain but a certain consistency, and then applied directly as a coating or lining.

In carrying out my invention I proceed as follows: Take any of the materials from which glue may be made and proceed in the usual or any suitable manner for the manufacture of glue until the soup has attained a certain consistency.

This consistency must be considerably less than that which is required wherein semi-fluid, solid, or cake glue is to be produced, and while it is in this half-finished state, so to speak, it is applied directly to the inside of the barrel or cask, where, after due evaporation, it will be found that said cask or barrel is lined thoroughly and completely with glue, inasmuch as a pressure of steam generated by the heat applied is sufficient to force the thin glutinous fluid well into the pores and recesses of the wood, thus insuring a perfect lining.

I am aware that barrels, &c., have been lined or coated with glue when said glue has been subjected to a process of reduction by dilution from its original consistency to a sufficiently liquid state; but I am not aware of any process wherein the glutinous material has been permitted to attain only its proper consistency, and then applied directly, thus saving the time, labor, and expense heretofore employed by continuing the manufacture of the glutinous soup until it has attained a semi-fluid or gelatinous consistency, thus necessitating a reduction by dilution and reheating before it is fit for application, as set forth in this specification, traveling over, as it were, the same ground backward and forward two or three times, whereas by my process this trouble is entirely dispensed with by operating as within described.

This invention has nothing to do with the glue-lined barrel

493 as an article of manufacture, but relates particularly to a new an- inexpensive process of constructing a glue-lined barrel, cask, &c.

Heretofore the glue has been taken in its complete state as an article of manufacture; has been reheated, diluted, and then applied; but such a process necessarily carries with it all the expense of preparing the glue at first as an article of trade or commerce.

My process contemplates taking the glue when at a proper consistency and applying it to the inside of the package, permitting it to harden for the first time upon that surface.

I claim as my invention:

The within-described process of coating or lining the inside of barrels, casks, &c., with glue, wherein the glutinous material, instead of being produced by reduction from a previously solid state, is permitted to attain only a certain liquid consistency and is then applied to the package and permitted to harden thereon for the first time, substantially as herein set forth and described.

In testimony that I claim the foregoing I have hereunto set my hand this 16th day of September, 1873.

EDWARD W. LEGGETT.

Witnesses:

LEVERETT L. LEGGETT.

EDM. F. BROWN.

494 DEFENDANT'S EXHIBIT E.

31 PENN AVE., PITTSBURGH, PA., *Nov.* 14*th*, 1874.

Standard Oil Co.

GENTLEMEN: Over a year ago I informed you of the advantage it would be to you to manufacture your own glue, and described to you the process I proposed to use, which is set forth in the enclosed patent.

You, in consideration of my imparting the information to you gave me your word of honor as gentlemen that you would not use the said process without my consent. Your consciences will, I think, tell how honorable you have been with me, and the respect you have shown my patent and your own honor.

I have never desired more than was right and just in this matter, and believe if you had acceded to my proposition it would have amply repaid you, as you would have gained a perfect success where you have only gained a partial one.

I am now working my process successfully, and can make glue as thick as required, which, from the information I have, you don't succeed in doing. Besides this, can bring the force to bear that will work your stock to better advantage than you are now doing.

I cannot but feel that I have a legal and moral claim against you, both of which, I think, should be worthy of your respect, and I should like to avoid all unpleasantness and arrive at an amicable settlement of this affair which I have allowed to rest until I should become more familiar with the working of your process and develop

it more fully myself. Having done this, I am ready to enlarge my field of operation, and shall be pleased to note your consideration of this matter, knowing we can make it to our mutual interest.

I remain, yours, &c., EDW. W. LEGGETT.

495 *Order Amending Answer and Reopening Defendant's Proofs.*

At a stated term of the circuit court of the United States of America for the southern district of New York, in the second circuit, held at the United States court-rooms, in the city of New York, on Monday, the 21st day of May, in the year of our Lord one thousand eight hundred and eighty-eight.

Present: The Hon. E. Henry Lacombe, circuit judge.

EDWARD W. LEGGETT
v.
STANDARD OIL COMPANY.

The motion on the part of the defendant herein for leave to amend the answer and to take the testimony of witnesses for the defendant in support of said amendment coming on to be heard, and after hearing counsel for the respective parties, it is now, on reading and filing the affidavits of Charles C. Beaman, Franz Xaver Baumann, Alexander Stevens, Francis F. Williams, Charles W. Cooper, William B. Weir, and Joseph C. Hewitt, in behalf of the defendant, and the affidavit of Edwin M. Felt in behalf of the complainant, on motion of solicitors for the defendant—

Ordered that the said motion be, and the same is hereby, granted, and that the defendant's answer herein be amended "so as to include among the parties alleged to have had prior knowledge of and
who used the alleged invention described in complainant's
496 letters patent more than two years prior to complainant's application for said letters patent, the names of the following parties, to wit:

"Peter Cooper, of New York, at Williamsburgh, New York.

"Franz Xaver Baumann, of Williamsburgh, New York, at said Williamsburgh."

And that defendant's testimony to show such prior knowledge and use be completed on or before Friday, the 25th day of May, 1888.

And it is further ordered that if complainant so desires the defendant shall argue this cause at the present term.

E. HENRY LACOMBE.

Testimony for Defendant Taken in Pursuance of the Order Made Herein on the 21st Day of May, 1888.

Before Joseph Gutman, Jr., examiner.

N. Y., *May* 22, 1888.

Present: Counsel for the respective parties as before.

FRANZ X. BAUMANN, a witness of lawful age, produced on the part of the defendant, having been by me first duly cautioned and sworn to testify the truth, the whole truth, and nothing but the truth in the matter of controversy herein, and being examined by Mr. CHARLES C. BEAMAN, counsel for the defendant, deposes and says as follows:

Q. 1. What is your name, age, residence and occupation?

A. My name is F. X. Baumann; I am 55 years old; I live at 84 Metropolitan avenue, Brooklyn, E. D.; I am at work in
497 Peter Cooper's glue factory, and have been working there since 1849 or 1850. I have been at work there ever since then.

Q. 2. What work have you had to do in the factory?

A. I came as a boy and was elevated from time to time—shifting around all the time—all jobs and trades.

Q. 3. What, if anything, have you ever had to do at that factory with the lining of the inside of barrels with glue?

A. I cannot tell, so many jobs I have had at it and so many places I have been through from time to time.

Q. 4. Explain what you mean.

A. Well, I first—well, I had instructions from the office to line the barrels. I went to work and got the barrels out of the cooper shop and I put the barrels where the glue was. I then took the bung-starter and took the bungs out and put the glue in. Then I put the bung- back again, and I had help, and I tossed the barrels around every way for about ten or fifteen minutes. Then I took the barrels back and put them on a skid with whatever glue was in and it ran out of the barrels.

Q. 5. How long ago did you do this?

A. I couldn't tell the time. I know it was some time ago—a good time ago. I could not remember what day or what month or what year.

Q. 6. Did you do it several times?

A. Yes, sir.

Q. 7. What was afterwards done with the barrels?

A. I took them away about two or three hundred feet from where we glued the barrels and let them stand for three or four days till they saw fit to take them away out of the place. Then I put them in the oil-house and filled them with neat's-foot oil.

Q. 8. What was the object of lining the barrels with glue in this way?

A. To keep them from leaking.

498 Q. 9. What was afterwards done with the barrels after they were filled with neat's-foot oil?

A. They were shipped.

Q. 10. Who helped you line these barrels with glue?

A. My father, Charles Baumann.

Q. 11. What was your father by trade?

A. Cooper and brewer.

Q. 12. Where had you and your father lived before you came to this country?

A. In Baden, Germany.

Q. 13. Had you ever seen your father in Baden lining barrels with anything?

A. Yes, sir.

Q. 14. With what?

A. With rosin.

Q. 15. How did he do that?

A. He put the rosin in in a melted condition and rolled them over and over.

Q. 16. What was the object of lining the barrels with rosin?

Objected to as immaterial and incompetent.

A. To keep them from leaking, and it kept the beer better.

Q. 17. When did your father begin working for Cooper's glue factory?

A. 1859.

Q. 18. How long did he continue to work there?

A. Twenty years.

Q. 19. When did your father die and where?

A. March 11, 1874, in Brooklyn, in Booraem street, E. D., between Union and Leonard streets.

Q. 20. Had your father been sick and unable to work for some time before his death?

A. Yes, sir.

Q. 21. What did your father do in helping you to line those barrels with glue at Cooper's glue factory?

A. He knowed how to do it. He done the same things as I done. We helped each one another.

499 Q. 22. Where did you get the glue from with which you and your father lined the barrels?

A. I got it from the cooler's or from the carrier's box.

Q. 23. In what condition was it—liquid?

A. It was liquid.

Q. 24. So that you could dip it up and it would run out?

A. It would run out—you could dip it up.

Q. 25. Where had this glue been made?

A. In the glue factory of Peter Cooper.

Q. 26. Were these coolers and boxes from which you took this glue in the liquid state part of the machinery or apparatus of Peter Cooper's glue factory?

A. I took a pail and a funnel and a dipper.

Q. 27. And where did you get your glue from?

A. From the coolers or box.

Q. 28. How had the liquid glue got into these coolers or boxes?

A. It came from the boiler and was put into the cooler so it would chill.

Q. 29. Had this glue in the coolers ever been chilled or reduced to a dry state?

A. It had been put into the coolers and sort of chilled so that we could handle it and be dry.

Q. 30. What was done with the glue in these coolers after it had been chilled and so that you could handle it?

A. Taken upstairs in the loft and cut through a machine and laid out on the nets.

Q. 31. What for?

A. To dry to use.

Q. 32. Did you ever, in lining the inside of these oil barrels with glue, use any of the glue that had been cut up into slices and dried?

Objected to as leading, and a motion will be made to strike it from the record.

A. No, sir.

500 Q. 33. Do you know Alexander Stevens and Francis F. Williams?

A. Yes, sir.

Q. 34. Have they been at work at Cooper's factory for a good many years?

A. Yes, sir.

Q. 35. Were they there when you and your father lined these oil barrels with glue?

A. To my knowledge, they were there.

Q. 36. Where was the glue factory at this time; at the same place where it is now?

A. No, sir; it was at the old factory.

Cross-examination by Mr. FELT, counsel for complainant:

X Q. 37. What was your age when you first went to work at Peter Cooper's glue factory?

A. I was sixteen years and nine months.

X Q. 38. What did you first work at?

A. I was in the loft.

X Q. 39. What did you do in the loft?

A. Dumping glues.

X Q. 40. What do you mean by dumping glues?

A. Off the net.

X Q. 41. Do you mean taking glue off of the nets after it had been dried?

A. Yes, sir.

X Q. 42. What else besides that have you had to do with the manufacture of glue—besides dumping it?

A. I couldn't tell, so many different things I done

X Q. 43. Can't you tell us anything else besides that that you had to do with the manufacture of glue?

A. Well, I couldn't remember all that, it is so long ago.

X Q. 44. I mean at any time prior to 1874.

A. I have been shifted to the carpenter shop from the loft.

501 X Q. 45. Are those the two places and the only two places you worked in in the factory prior to 1874?

A. No, sir. My father came in the factory. He was a cooper and we headed the barrels and trimmed the barrels.

X Q. 46. Then you helped your father head up and trim the barrels?

A. Yes, sir.

X Q. 47. Was there anything else you did in the factory prior to 1874 besides what you have stated?

A. I — been through the warehouses.

X Q. 48. What did you do in the warehouses?

A. Take care of the barrels.

X Q. 49. The empty barrels?

A. The full barrels.

X Q. 50. The barrels filled with dry glue, do you mean?

A. Yes, sir.

X Q. 51. Anything else that you remember that you did in the factory prior to 1874?

A. I was shifted to the office.

X Q. 52. What did you do in the office?

A. A sort of shipping clerk.

X Q. 53. Anything else that you remember?

A. No, sir; nothing else.

X Q. 54. Now, what kind of barrels were there that you say you poured liquid glue into?

A. Alcohol barrels, and some were new barrels.

X Q. 55. What was put into these barrels after they were lined as you say?

A. Neat's-foot oil.

X Q. 56. You say they were shipped after they were filled with neat's-foot oil. Did you ever see them again?

A. No, sir.

X Q. 57. How much of this liquid glue did you pour into each barrel?

502 A. I wasn't very particular; maybe a gallon, maybe a half gallon, maybe two gallons. We had plenty.

X Q. 58. Poured it into the bung-hole, didn't you?

A. Yes, sir.

X Q. 59. How long did you let it remain in there before you let it run out again?

A. Fifteen minutes or twenty.

X Q. 60. Well, how much would run out?

A. I couldn't tell you exactly how much. It would run out some, more or less.

X Q. 61. Did you examine any of the insides of these barrels to see how thoroughly they were coated?

A. Yes, sir.

X Q. 62. How did you do that?

A. I had a piece of wire and a lamp attached to the wire and dropped it in the bung-hole lighted.

X Q. 63. What part of the inside of the barrel could you see then?

A. I could see all around.

X Q. 64. Do you mean to say you could see the whole of the inside of the barrel?

A. Yes, sir.

X Q. 65. Could you see if there were any pin-holes in the barrels in the inside with that light?

A. Not after it had been glued; you couldn't see anything.

X Q. 66. Now, where do you say that you got this glue from that you say you put into these barrels?

A. From the coolers or from the box.

X Q. 67. What was it put into the boxes for?

A. So as to be carried from the kettle to the coolers.

X Q. 68. Do you remember which you took it from, whether from the boxes or from the coolers?

A. Sometimes from the boxes, sometimes from the coolers.

X Q. 69. Are you sure; were the boxes and the coolers standing together?

503 A. Sometimes there would be about twelve feet or ten feet or six feet.

X Q. 70. How long had this glue been in the coolers?

A. It had been run in there. It depends on how hot the weather was. Maybe ten hours or twelve hours.

X Q. 71. Can you state, Mr. Baumann, how long any of that glue had been in any of those coolers?

A. Well, I can state that as sometimes a day, sometimes ten hours, sometimes twelve hours, sometimes six hours, sometimes two hours.

X Q. 72. Tell us how long any particular batch of glue had been in any of those coolers before you took it up.

A. I don't really know; I couldn't say that.

X Q. 73. Well, you really do not know as a fact how long any particular batch of glue had been in any of those coolers before you took it out?

A. I would ask you what you mean by it.

X Q. 74. What part of the question don't you understand?

A. I would ask whether the glue was taken for that purpose or not.

X Q. 75. I refer to any glue which you say you took out of any of these coolers to pour into any of these barrels, as you have stated, and ask you if you know as a fact how long any of it had been in any cooler that you took it from at the time you ladled it out and poured it into any barrel.

A. I took it just as it run out of the box into the cooler or out of the cooler; either one. If the box got empty and was taken away

I took it from the cooler. The glue hadn't been in the cooler a minute.

X Q. 76. Then why did you say it had been in there from six hours to a day, some of it?

A. Not for lining the barrels.

504 X Q. 77. What was the temperature of this glue that you took from the cooler and poured into the barrels?

A. I could not tell.

X Q. 78. Can you give us any idea?

A. No, sir; I couldn't give you any; all I know, it was hot.

X Q. 79. You don't know how long it had been in the boiler before it was put into the cooler, do you?

A. No, sir.

X Q. 80. What was it put into the cooler for?

A. So it would jelly.

X Q. 81. And after it had jellied it would be cut into slices and put on the net, wouldn't it, to dry?

A. Yes.

X Q. 82. And when dried it was finished glue or dry glue?

A. It was finished.

Redirect examination by Mr. BEAMAN:

R. D. Q. 83. In stating that the glue stayed in the coolers different times at different seasons state whether or not you did not mean that it took a longer or shorter time for the glue to jelly at some times than others.

Objected to as leading.

A. Well, I don't understand the question.

R. D. Q. 84. Was the glue as you took it from the boxes or coolers and poured it into the barrels liquid?

A. Yes, sir.

R. D. Q. 85. Was your father buried in Evergreen cemetery?

A. No, sir; in the Holy Cross burial ground; right across from the Evergreens.

F. X. BAUMANN.

Sworn to before me—

JOSEPH GUTMAN, Jr., *Examiner*.

505 FRANCIS F. WILLIAMS, a witness of lawful age, produced on the part of the defendant, having been by me first duly cautioned and sworn to testify the truth, the whole truth, and nothing but the truth in the matter of controversy herein, and being examined by Mr. BEAMAN, counsel for defendant, deposes and says as follows:

Q. 1. What is your name, age, residence, and occupation?

A. My name is Francis F. Williams; I am fifty years old; I live at No. 25 Orient avenue, Brooklyn; I am a glue manufacturer.

Q. 2. What is now your employment?

A. I am foreman or have general supervision of the Peter Cooper glue factory, at Brooklyn.

Q. 3. How long have you been working for Peter Cooper's glue factory?

A. About thirty-eight years.

Q. 4. How long have you been foreman or assistant foreman?

A. Twenty-five years; I had temporary charge at the age of nineteen.

Q. 5. Do you know the witness, F. X. Baumann, who has just testified?

A. I do; he has been employed in the glue factory for over thirty years.

Q. 6. Did you know his father?

A. I did; we used to call him old Charlie.

Q. 7. State what, if any, knowledge you have as to the lining at Peter Cooper's factory of barrels with glue.

A. I have seen old Charlie helped by F. X. Bauman, whom we called Ferry. I have also detailed boys to help to line the barrels. The glue which was used for lining the barrels was not dried glue; it is seldom in the factory that we use dried glues for any other purposes than glueing joints or testing the quality of the glue.

I remember distinctly of seeing them glue the barrels, and
506 the place is what was known as the south end of the factory.
One reason why that place was selected was on account of the facilities for doing the work.

So much of this answer from "it is seldom" down to "the quality of the glue" objected to as not responsive, and a motion will be made to strike it out.

Q. 8. How did they glue the barrels?

A. By pouring the glue in the barrel, driving in a bung when a sufficient quantity was in, and rolling the barrel on a skid.

Q. 9. What part of it did the boys help to do?

A. I have seen them rolling the barrels. They may have done other work unknown to me.

Q. 10. In what condition was the glue that was poured into the barrels and where did they get it?

A. The glue was liquid. They got it from a carrier or cooler, and I also have a recollection of taking it from an iron pot.

Q. 11. What was this carrier and cooler and what was their use in the general business of the factory?

A. The carrier is a box on wheels which conveyed the glue from the boiler to the coolers. The coolers were to receive the glue for the purpose of chilling.

Q. 12. What in the usual course of business would have been done with the liquid glue which they poured into these barrels if they had not used it for that purpose?

A. After it had become solid it would then be cut in slices or slabs, placed upon nets and dried.

Q. 13. State whether the liquid glue that they used to line these

barrels was such as in the ordinary course of business was from time to time being made at the glue factory in the process of manufacturing dry glue.

A. Yes; it was made in the same regular way as all other glues.

507 Q. 14. What was the object of lining these barrels with glue?

A. To prevent leakage.

Q. 15. What was afterwards done with the barrels after they were lined?

A. They were filled with neat's-foot oil and shipped. We did not line all our barrels. Home trade we never lined.

Q. 16. What barrels did you line?

A. Barrels that were to be shipped some distance.

Q. 17. How long ago do you remember to have seen old Charlie and his son, F. X. Baumann, at work lining these barrels?

A. Well, that is very difficult for me to say, but it is safe to say twenty years ago.

Q. 18. Was it part of the regular course of business at that time to so line the barrels with glue in which the neat's-foot oil was to be shipped on long distances?

A. It was. Some of the barrels; not all.

Q. 19. Do you know Alexander Stevens, who is now at work in Peter Cooper's glue factory?

A. I do. He has worked there twenty-five or thirty years; maybe longer.

Q. 20. So far as you know did the lining of glue that was put on the inside of these barrels by old Charlie Baumann and his son serve to prevent the leakage of the oil?

A. We were under that impression that it did, and that was why it was done.

Cross-examination waived.

FRANCIS F. WILLIAMS.

Sworn to before me—

JOSEPH GUTMAN, JR., *Examiner.*

508 ALEXANDER STEVENS, a witness of lawful age, produced on the part of the defendant, having been by me first duly cautioned and sworn to testify the truth, the whole truth, and nothing but the truth in the matter of controversy herein, and being examined by Mr. BEAMAN, counsel for defendant, deposes and says as follows:

Q. 1. What is your name, age, residence, and occupation?

A. My name is Alexander Stevens; I am fifty-three years old; I reside at No. 77 Metropolitan avenue, Brooklyn, E. D. I work at Peter Cooper's glue factory, and have done so for about thirty-seven years. I know F. X. Baumann, who has just testified, and I used to know his father, old Charlie, as we called him.

Q. 2. State whether or not you have ever seen barrels lined with glue at Peter Cooper's glue factory.

A. Yes, sir.

Q. 3. How was it done?

A. When I seen them doing it they took it out of the evaporator and they put it in the bung-hole, put the bung in, and then rolled the barrels around.

Q. 4. Who did this?

A. Ferry Baumann and his father, Charlie Baumann.

Q. 5. How long ago?

A. About 28 years ago.

Q. 6. What were you doing at that time?

A. I had charge of the fires and of those boilers where they boiled the feet.

Q. 7. What was the evaporator?

A. It was a long box, about 18 inches high and about 20 or 25 feet long. It was used for evaporating the glue. When it gets out of the boiler we put it in there.

And being cross-examined by Mr. FELT, for complainant, he says:

509 X Q. 8. What were you working at at that time, Mr. Stevens?

A. I had charge of the firing under the boilers.

X Q. 9. Anything else?

A. No, sir.

X Q. 10. And what was your age then?

A. I could not tell exactly.

his
ALEXANDER x STEVENS.
mark.

Sworn to before me—
JOSEPH GUTMAN, JR., *Examiner.*

CHARLES W. COOPER, a witness of lawful age, produced on the part of the defendant, having been by me first duly cautioned and sworn to testify the truth, the whole truth, and nothing but the truth in the matter of controversy herein and being examined by Mr. BEAMAN, counsel for defendant, deposes and says as follows:

Q. 1. You are the same person who has already testified in this case?

A. Yes.

Q. 2. Do you know the witness, F. X. Baumann, and Alexander Stevens and Francis F. Williams, who have been here to-day and given their testimony?

A. I do.

Q. 3. Have they been in your employ a long time and are they generally worthy of credit?

A. I believe so.

Q. 4. Did you know Charles Baumann, the father of F. X. Baumann?

A. I did. He was in our employ a long time.

Q. 5. Have you made any examination of your wages book for the purpose of seeing when he ceased to be in your employ?

A. I have.

Q. 6. What do you find?

510 A. I find by the wages book which I have here the last time that he worked at our factory was the week ending November 27, 1871. The last time I find his name appearing on the roll is the week ending December 11, 1871. I have searched the roll until March 16, 1874, without finding his name again.

Q. 7. Do you now keep and has it been your habit to keep a correct roll of the people employed at your factory?

A. Yes.

Q. 8. What knowledge have you as to the lining of barrels at your factory with glue?

A. I know we did line them for oil to be sent to California.

Q. 9. With what kind of glue were they so lined?

A. I have always understood it was liquid glue from the coolers or tanks.

Q. 10. Are you able to fix any dates from your own memory at which this was done?

A. Not accurately. I should think at least as long as 25 years ago and more recently also.

Q. 10½. Have you any reason to doubt the truthfulness of the witnesses, F. X. Baumann, Francis F. Williams, and Alexander Stevens, that this was done while Charles Baumann was at work for you?

A. No; I have none.

Q. 11. Do you remember making shipments of oil to Whittier, Fuller & Co., of San Francisco?

A. Not by the name. My knowledge is too general for that.

And being cross-examined by Mr. FELT, counsel for complainant, he says:

X Q. 12. What knowledge have you of the lining of these barrels with glue as testified to by the witnesses, Stevens, Williams, and Baumann?

A. I didn't hear all their testimony.

511 X Q. 13. Have you any personal knowledge of the lining of barrels with glue at your factory prior to 1874?

A. I have no doubt that I have known of it being done frequently at the factory before that time, but I couldn't specify any instances or fix dates.

X Q. 14. Can you say that you ever saw it done prior to that date?

A. I feel very positive that I did; but I won't absolutely say that I did before that date or after.

X Q. 15. What was put into these barrels?

A. Neat's-foot oil.

X Q. 16. Do you know of such barrels being lined with glue as contain neat's-foot oil?

A. I haven't known of any barrels being lined at the factory for some years back. I don't think my attention has been called to the lining of barrels for ten years back—perhaps longer. Orders might have come from the store to have them lined without my knowledge and the work have been done.

X Q. 17. Do you know why the practice was discontinued?

A. The matter of lining barrels was usually directed from the store in New York, and we at the factory simply followed the directions we received.

X Q. 18. And was this lining confined to such barrels as were intended for California?

A. Yes: I think, generally, at any rate.

X Q. 19. Did you ever see any of those lined barrels after they had once been sent away?

A. I have no recollection of it.

And being re-examined by Mr. BEAMAN, he says:

512 R. D. Q. 20. Do you remember about when you gave up the use at the old factory of the so-called evaporator?

A. I think it was some time during the war.

CHAS. W. COOPER.

Sworn to before me—
JOSEPH GUTMAN, JR., *Examiner.*

JOSEPH C. HEWITT, a witness of lawful age, produced on the part of the defendant, having been by me first duly cautioned and sworn to testify the truth, the whole truth, and nothing but the truth in the matter of controversy herein, and being examined by Mr. BEAMAN, counsel for defendant, deposes and says as follows:

Q. 1. What is your name, age, residence, and occupation?

A. My name is Joseph C. Hewitt; I am 48 years old; I reside at Montclair, N. J.; I am a clerk in the employ of Peter Cooper's glue Co., and have been for twenty years.

Q. 2. Did you know S. W. Johnson, of New York?

A. I did; he is now dead; he died a year or more ago; Mr. Johnson was the purchasing agent for Cameron, Whittier & Co., and later for Whittier, Fuller & Co., the successors of the firm, of San Francisco.

Q. 3. Did Mr. Johnson, for these firms, buy neat's-foot oil of Peter Cooper's glue factory?

A. Yes, sir.

Q. 4. Please state if you had charge of the books of Peter Cooper and of Peter Cooper's glue factory, and if you have examined the books from 1855 to 1867, inclusive, and find sales of neat's-foot oil to Sawyer, Johnson & Co. in 1855 and 1856, and to Cameron, Whittier & Co. in each year thereafter to 1867.

Objected to as incompetent.

513 A. Yes; I have examined the books from the dates named from 1855, inclusive, to the year 1867, inclusive, and later,

and I find during the dates stated sales of neat's-foot oil in each year up to 1867, inclusive.

Q. 5. What sales were made during the year 1863 to Whittier, Fuller & Co.?

Objected to as irrelevant and immaterial.

A. In 1863 we made the following sales: May 9, three barrels; May 25, four barrels; June 22, four barrels; July 10, five barrels; August 22, three barrels; September 10, five barrels.

Q. 6. Was there any oil charged to or shipped to these firms during the years 1868, 1869, 1870, or 1871?

Same objection.

A. I found none, but there were shipments made in 1872 and 1874.

Q. 7. Have you the books here which you examined and from which you make those statements?

A. We have.

JOS. C. HEWITT.

Sworn to before me—
JOSEPH GUTMAN, JR., *Examiner.*

Cross-examination waived.

Before Joseph Gutman, Jr., examiner.

NEW YORK, *May* 25, 1888—3 p. m.

Present: Counsel as before.

WILLIAM B. WEIR, a witness of lawful age, produced on the part of the defendant, having been by me first duly cautioned and sworn to testify the truth, the whole truth, and nothing but the truth
514 in the matter of controversy herein, and being examined by Mr. BEAMAN, counsel for defendant, deposes and says as follows:

Q. 1. What is your name, age, residence, and occupation?

A. My name is William B. Weir; I am 27 years old; I reside at No. 60 West Thirty-sixth street; I am agent in New York of Whittier, Fuller & Co., of San Francisco.

Q. 2. What is the business of that house?

A. Paints and oils.

Q. 3. How long have you been in its employ?

A. Nine years.

Q. 4. Who was its former agent in New York?

A. Silas W. Johnson.

Q. 5. Is he still alive?

A. No; he died about a year ago.

Q. 6. Were you a clerk with him while he was agent?

A. Yes; I began with him in 1879. I was clerk with him and became agent about two years before Mr. Johnson died, and have since continued as agent.

Q. 7. What was the predecessor firm in San Francisco of Whittier, Fuller & Co.?

A. Cameron, Whittier & Co.

Q. 8. Do you know about when the firm changed?

A. No, sir; I could not say positively. I think it was about 1872.

Q. 9. Have you in your possession any of the old books and papers of the New York office or agency of Cameron, Whittier & Co. and of Whittier, Fuller & Co.?

A. Yes, sir; but not complete.

Q. 10. From whom did you receive these books and papers?

A. I found them in the office after succeeding Mr. Johnson.

Q. 11. Have you examined at my suggestion any of these
515 old papers for the purpose of finding any memorandum bills or papers showing the sale by Peter Cooper previous to 1874 of neat's-foot oil to the firms of Cameron, Whittier & Co. and Whittier, Fuller & Co.?

A. Yes, sir.

Q. 12. Have you found such papers or bills showing such sales?

A. Yes, sir.

Q. 13. Please look at the paper which I now show you and state what it is.

Objected to as incompetent.

A. It is an order to Mr. Johnson, signed Cameron, Whittier & Co., dated April 23, 1863, directing him to buy a variety of articles.

Q. 14. Has this paper been found by you in the office when Mr. Johnson turned it over to you?

A. Yes, sir.

Q. 15. Is it, to the best of your judgment and belief, an original order which was sent by Cameron, Whittier & Co. from San Francisco at its date, April 23, 1863, to Mr. Johnson in New York?

Objected to as incompetent.

A. Yes, sir.

Q. 16. In whose handwriting is this paper signed?

A. I can't say positively.

Q. 17. Is it in the same handwriting that you find in other papers addressed by that firm to Mr. Johnson?

A. At that time? Yes, sir.

Q. 18. Is there any writing on this paper that you are able to identify as the writing of Mr. Johnson?

A. No; it is too far back; I could not do it.

The paper shown the witness is offered in evidence and marked Cameron, Whittier & Co. Exhibit, the attention of the counsel being particularly called to the portion of the entry on the second
516 page as follows: "Send 10 packs. white metal with next stmr. goods. Neat's-foot oil, 5 bls. Cooper's No. 1 in good bls. reglued."

It is consented that a copy of the paper shown the witness or such

portion of it as desired be printed and the paper itself shown at the trial.

Q. 19. Have you the books of Mr. Johnson as agent during 1863 which will show whether Mr. Johnson bought the five barrels of Peter Cooper's neat's-foot oil referred to in this order of 1863?

A. No, sir; I find charges in the ledger in 1863 with Peter Cooper, but not the details. The invoice book of that year has not been kept.

Cross-examination by Mr. FELT:

X Q. 20. Why do you say in answer to questions 11 and 12 that this paper shows the sale by Peter Cooper previous to 1874 of neat's-foot oil to the firm of Cameron, Whittier & Co.?

A. I didn't intend to say so.

X Q. 21. Then this paper does not show any sales?

A. No, sir.

X Q. 22. This, I understand it, is an order by Cameron, Whittier & Co. or direction to their New York agent to purchase the articles enumerated in it?

A. Yes, sir.

X Q. 23. Please read the portion of that order which speaks of neat's-foot oil.

A. "Neat's-foot oil—5 bls. Cooper's No. 1, in good bls. reglued."

X Q. 24. Do you find anything in there about Peter Cooper's?

A. No, sir.

X Q. 25. Then you do not know and there is nothing to show that this neat's-foot oil spoken of was Peter Cooper's, is there?

A. No; there is not.

517 X Q. 26. And you know nothing more about it than what you see in the order?

A. No, sir.

Redirect examination by Mr. BEAMAN:

R. D. Q. 27. You find an account in the ledger with Peter Cooper for the year 1863, do you not?

A. Yes, sir.

R. D. Q. 28. Did you ever hear of any other Cooper's neat's-foot oil than Peter Cooper's neat's-foot oil?

A. No, sir.

R. D. Q. 29. Have you found any of the papers or bills from Peter Cooper to Cameron, Whittier & Co. for neat's-foot oil in barrels subsequent to 1863 and prior to 1873?

A. I can't say. If I had the bills here I could answer.

R. D. Q. 30. Please look at the bill which I now show you and state whether that is not such a bill as you so found.

A. Yes, sir; this is a bill dated October 3, 1864. Cameron, Whittier & Co. bought of Peter Cooper 3 barrels No. 1 N. F. oil.

WM. B. WEIR.

Sworn to before me—
JOSEPH GUTMAN, *Examiner.*

The bill shown the witness is offered in evidence and marked Cameron, Whittier & Co. bill of October 3, 1864.

The following is a copy of the bill produced, which it is consented may be substituted, the original bill to be produced on the trial.

518 NEW YORK, *October* 3, 1864.

Messrs. Cameron, Whittier & Co., bought of Peter Cooper, No. 17 Burling Slip.

Barrels.	Boxes.			
3		No. 1 N. F. oil.		
		39 40 42 12 1. 118.	$1 80 ----------	$212 40
		Barrels,	2 00 ----------	6 00
				$218 40
		Insurance 2½ per cent. ----------		$5 62

Per ship Great Republic.

Defendant's counsel, by consent, offers the original letters patent No. 143,770, granted to Edward W. Leggett October 21, 1873.

The same is marked Defendant's Exhibit Leggett Original Patent.

CAMERON, WHITTIER & CO. EXHIBIT. May 25, 1888. J. G., Jr., Ex'r.

Order for Mr. S. W. Johnson, April 23d, '63.

Blacks, dry.	2 bls. Eddy's assorted.
	5 " common "
	3 " " 1s.—2s.
	3 " " 1s.—2s.
	2 " C. C., small papers.
Blacks in oil.	1 cask, say 50–25 lbs., kegs pure.
	2 cases 1s and 2s, extra.
	3 " 1s, "
	2 casks, say 100–25 lb. kegs, extra.
Note.	Do not ship the case Dry Black in water ordered 3d inst.
Browns dry.	2 bls. Eng. Spanish.
Blue "	2 cases lump Prussian. Pure.
	1 case powd'd " "
	2 cases ultramarine.

519

Blues in oil.	2 cases 1s.—2s. and 1s. Extra.
	2 " 1s.—2s. "
	2 " 1s.—2s. and 1s. No. 1.
	2 " 1s.—2s. "
Red Chalk.	1 bl. in fingers.
Pat. Dryer.	1 case 1s & 2s.
	2 cases 1s.

Fire-Proof Paint.		10 Bls. Chocolate.		
Paris Green dry.		2–56 lb. Cans.		Best.
	Do. in oil.	2 cases	1s & 2s.	Extra.
	Do. do.	2 "	1s.	No. 1.
Chrome	do. do.	2 "	1s & 2s.	Extra.
Do.	do. do.	2 "	1s & 2s.	No. 1.
Do.	do.	2 "	1s.	"

Order April 23rd, Continued.

Leads in Oil.	"Shawmut" 10-50s, 100-25s kegs.
	Do. 10-200s, 20-100s cases, 25 lb. cans.
	Do. 5-100 lb. cases, 1s & 5s assorted.
Do.	Phoenix, 20-200s, 40-100s cases, 25 lb. cans.
Do.	Albion, 40-200s, 20-100s cases, 25 lb. cans.
Leads dry Red.	25-100 lb kegs, Atc. or Eng. best price.
Litharge.	10-100 kegs.
	Send 10 packs White Metal with next Stmr. goods.
Neat's-foot Oil.	5 Bls. Cooper's No. 1, in good bls. reglued.
Putty.	10 Bls. in Bladders soft.
	10 half Bls. "
Ven. Red.	5 Bls. dry best English.
Red in Oil.	Ven'n Ex. 10-10, 20-5 packed.
	Do. 2 Cs. 1 & 2.
	Do. 2 " 1.
	Common, 1 Cask, say 50-25 kegs, marked Extra.
520	Siennas in Oil Burnt, 1 Case 1 & 2 Pure.
	1 " 1 "
	2 cases 1 Extra.
Japanned Tins, 5 doz, each, 10-14, 12-17, 14-20. Black.	
Umber in Oil, Burnt,	2 cases ass'd. Pure.
	" 2 " 1 & 2. "
	do. 2 do. 1 & 2. Extra.
	" 3 " 1 "
	Raw, 2 " 1 Pure.
Whiting,	20 Bls.
White Paris,	5 do.
" Satin,	3 "
Yellows, Dry,	3 " Havre.
	5 " American.

Add'l 1,000 Gals. 95 % Alcohol in Tin if it can be laid down here for 90c.

Order, April 23d, continued.

Yellows, Dry.	1 Case Lt. Lemon Drop, Pure.
	2 Cs. L. & M. N. York. "
	2 " each L. & M. Manhattanville.
	1 " O. Manhattanville.
Yellows in Oil.	Extra 2 Cs. 1 s. Ochre.
	Common, 2 Cks., say 100–25 kegs, marked Extra.

Do. Chrome	2 Cs.	1 & 2.	Pure.
	2 "	1 & 2.	Extra.
	3 "	1 s.	"
	3 "	"	No. 1.
Zinc, Dry.	3 Bls.	No. 1 French.	
	2 "	Extra Amn.	
Do. in Oil.	3–200 kegs.	Pure French.	
	5–200 cases.	do. In pail cans 25 s.	
	5–100 "	" " " "	"
	10–100 "	S. W. " "	"

If you can buy 1 in Rough Plates in N. Y. costing here about $1 pr. foot.

Ship 30 Lights 18–24.
20 do. 24–30.
24 do. 24–36.

521 We wish it as white as possible.
Some of it is very green, which will not answer.

CAMERON, WHITTIER & CO.,
Pr. C.

To Mr. S. W. Johnson, New York.

(Endorsed :) Order April 23d, 1863.

522 At a stated term of the circuit court of the United States of America for the southern district of New York, in the second circuit, held at the United States court-rooms, in the city of New York, on Tuesday, the ninth day of April, in the year of our Lord one thousand eight hundred and eighty-nine.

Present : The Honorable Nathaniel Shipman, judge.

EDWARD W. LEGGETT
vs.
THE STANDARD OIL COMPANY. } Final Hearing.

The above-entitled cause coming on for final hearing upon pleadings & proofs, Edmund Wetmore & Edwin M. Felt, Esqs., counsel for the complainant, are heard on his behalf, and Charles C. Beaman & Edward N. Dickson, Esqs., are heard on behalf of the defendant.

C. A. V.

523 Circuit Court of the United States for the Southern District of New York.

EDWARD W. LEGGETT
vs.
THE STANDARD OIL COMPANY.

SHIPMAN, *J.* :

This is a bill in equity to restrain the defendant from the infringement of reissued letters patent, applied for January 24th,

1874, issued March 10th, 1874, to Edward W. Leggett for an improved mode of lining the inside of oil barrels with glue. The original patent was dated October 21st, 1873.

The ordinary dried glue of commerce is usually made from the trimmings of skins which come from slaughter-houses and tanneries, as follows: The skins are soaked in water and lime to remove the fat and grease, and are then thoroughly washed and exposed to the air, or may be treated with a solution of acid to remove the lime, for the presence of lime, after it has performed its original office, is exceedingly injurious to the glue. The stock is then boiled by the application of steam heat, and when the solution has been effected by boiling the liquid glue is run into moulds and allowed to set and form a jelly. The jelly is cut into slices, which are
524 spread upon nets and dried. The drying part of the process is simply to bring the glue to a condition in which it will keep permanently, can be transported and be a merchantable article, for either liquid glue or jelly glue, unless mixed with antiseptics, quickly and easily attracts impurities from the atmosphere, decomposes, and is spoiled. In order to make glue a commercial article for general use it must be dried. This part of the process is the most expensive, because the jelly glue is easily influenced by atmospheric changes, and when thus affected will not dry, but melts and becomes worthless. Before 1874 hydrocarbon-oil barrels were prevented from leaking by pouring into them a sufficient quantity of hot glue, rolling the barrels, and thus permitting a lining or coating of glue to be formed upon the inside of the barrels. The liquid glue for this purpose was made in the ordinary way of melting dried glue and heating the solution.

The invention consisted in applying directly to the barrels hot liquid glue or "glue soup" before it had been subjected to the cooling or drying part of the ordinary process of manufacture. The patentee describes his invention in the specification of the reissued patent as follows:

"It consists in preparing, from any glutinous substance, glue soup, said soup being permitted to attain but a certain consistency, and then applied directly as a coating or sizing.

In carrying out my invention I proceed as follows: Take
525 any of the materials from which glue may be made and proceed in the usual or any suitable manner for the manufacture of glue until the soup has attained a certain consistency.

This consistency must be considerably less than that which is required whereby semi-fluid, solid, or cake glue is to be produced, and while it is in this half-finished state, so to speak, it is applied directly to the inside of the barrel or cask, where, after due evaporation, it will be found that said cask or barrel is lined thoroughly and completely with the material, inasmuch as a pressure of steam generated by heat applied is sufficient to force the thin, glutinous fluid or soup well into the pores, fibers, and recesses of the wood, thus insuring a perfect lining.

I am aware that barrels, &c., have been lined or coated with glue of commerce, when said glue has been subjected to a process of re-

duction by dilution from its original consistency to a sufficiently liquid state; but I am not aware of any process wherein the glutinous material has been permitted to attain only its proper consistency for the purpose specified, and then applied directly, thus saving the time, labor, and expense heretofore employed by continuing the manufacture of the gelatinous soup until it has attained a glutinous condition, thus necessitating a reduction by diluting and reheating before it is fit for application, as set forth in this specification,
526 traveling over, as it were, the same ground backward and forward two or three times, whereas, by my process, this trouble is entirely dispensed with by operating as within described.

This invention has nothing to do with the ordinary glue-lined barrel, but related to a new and inexpensive mode or process of making barrels, casks, &c., better adapted to the purpose designed, by coating or sizing, as set forth, than by the ordinary means.

Heretofore glue has been taken in its completed state as an article of manufacture, reheated, diluted, and then applied; but such a process necessarily carries with it all the expense of preparing the glue at first as an article of trade or commerce.

My process contemplates taking the said soup when at a proper consistency and applying it to the inside of the package, permitting it to harden for the first time upon that surface.

The distinguishing feature of this improvement may be found on examination to be the superior integrity of the lining by the use of soup glue. By its peculiar character it is more freely absorbed by the wood, penetrating into fiber deeper than by the ordinary mode. Hence the sizing or coating is not only upon the surface, but penetrates into the wood, thereby presenting a thicker covering to the action of the oil; and this sizing is not liable to be broken off or cracked in handling the cask, as part of the coating is
527 absorbed into the fiber and cells of the wood, which gives additional strength to it."

The claims are as follows:

"1. The within described process of coating or lining the inside of barrels, casks, &c., wherein the glutinous material, instead of being produced by reduction from a previously solid state, is permitted to attain only a certain liquid consistency, and is then applied to the package and permitted to harden thereon for the first time, substantially as herein set forth and described.

2. A barrel, cask, &c., coated or sized by the material, and by the mode or process whereby it is absorbed into and strengthened by the wood fiber, substantially as herein described."

The patented process has been very extensively used by the defendant; such use commenced after the date of the patent.

The question which first and most strongly presents itself is that of the patentability of the described and patented process. Upon this question the plaintiff's counsel insists that a solution of glue formed in the course of the original boiling and a solution of glue formed by dissolving the dried glue are not identical; that the latter is subject to changes, only partially understood, but positive

and efficient, whereby the adhesive property of the gel-
528 atine is diminished; that although this was theoretically known at the date of the invention, and although jelly glue was, at the same date, so treated as to last without decomposition, the use of glue fresh from the tubs was unknown; that dried glue dissolved was the only thing that was used, and glue fresh from the boiling pot was not a known substitute for dissolved dried glue in the lining of oil barrels; that no one then knew or believed that it could be used for that purpose, but that Leggett made the practical discovery that glue, in the boiling state and before it was dried, made a more efficient and economical article for the uses of the oil-refiner than remelted dried glue, and that thus a new process was created by which a large and expensive part of the old process was avoided.

It must be regarded as proved that, before the date of the invention, practical experts believed that remelted dried glue was inferior in adhesiveness and binding qualities to hot and undried glue. Thus, it was stated in Wagner's Yearly Report of Chemical Technology for 1869 (vol. 15, page 657) that the adhesive and binding power of glue is greatly diminished in the process of drying in the air. Messrs. Wiedenhold and Plumer, two of the very intelligent witnesses on the part of the plaintiff, knew before the date of the invention that glue hot from the tubs was in the best condition and would penetrate better. It is not important to ascer-
529 tain whether this inferiority is inevitable in the case of the best dry glue which had been only once remelted, because the frequent liability of glue to suffer deterioration in the process of drying from one cause or another is undeniable, and therefore the opinion of the experts was practically correct. While this inferiority was theoretically known, it is also true that glue hot from the tubs was not used, and that its advantages were not introduced to the public, except in the isolated instances to which reference will hereafter be made. The glue jelly manufactured by Stalling, near Dresden, in and after 1869, was a very different thing from the liquid article which is the subject of this patent. Stalling's article was a glue jelly, capable of transportation, and was "extracted in a peculiar manner entirely by treatment of bones with cold water under steam pressure." The plaintiff, from the fact that inasmuch as the patentee was the first person who showed the public either to use or how to use the liquid article for the inside of barrels, by which a better result and a large saving of expense were effected, draws the conclusion that he is entitled to the benefits which the statutes confer upon first inventors. This conclusion would be correct if Leggett gave to the public the result of invention and did not merely give the commercial suggestions which would naturally occur to a person acquainted with the manufacture of glue.
530 The manufacture of dried glue was a necessity, because the mechanic who has only the ordinary business of his calling must buy rather than make his glue. His business requirements do not compel him to be a daily consumer of a large quantity of the article, and it must therefore be purchased in a dry state,

The use of hot glue as it flowed into the tubs was not practiced because there was no occasion for such use, but when the time came that a manufacturer needed daily a very large supply of glue the suggestion of a change in the mode in which he should procure and use glue was made, but the novelty consisted in the suggestion that he should be his own manufacturer. There was no novelty in the idea of the superiority or economy of hot liquid glue, and so much of the claim of the patentee to the character of an inventor as rests upon the discovery of the superior integrity of the lining by the use of "soup glue" is fallacious. Liquid glue had never been manufactured before for daily use simply because nobody needed a large daily supply, and the idea that the patentee exercised the genius of an inventor in first practically introducing the article to the public is without adequate foundation, for it was a business rather than a mechanical suggestion. The thought that the defendant, which was a large daily consumer, could profitably be its own manufacturer of glue came both to the patentee and to Mr. Plumer, who also subsequently communicated the same idea to the defendant, but neither is entitled on that account to be considered an in-
531 ventor, but each is rather to be regarded as having prompt ability to seize upon correct methods of conducting a large business.

It is also true that there was no invention in the application of liquid glue taken freshly from the tubs to the inside of barrels. The use of such glue came naturally and in the ordinary line of thought to Wiedenhold when the occasion came to him to line barrels. It came also to Baumann, before the date of Leggett's invention, when he was called upon to line neat's-foot oil barrels in Peter Cooper's glue factory. Such use was undoubtedly occasionally practiced in that factory in other instances about the same time. The idea was the natural one which would readily occur to the intelligent mechanic in the factory. It is not strange that it did not occur to oil-refiners, for they were not glue-makers. It is not strange that it was not made public because the occasion had not arrived for its development. It would be useless to the oil-refiner, who used but a few barrels daily, for he could not afford to manufacture glue, but when the occasion arose the proper method of doing the business naturally presented itself to the mind of a person familiar with glue manufacture.

I do not consider whether an anticipation of Leggett's improvement is clearly proved by the facts which took place in Cooper's factory, but I place the decision upon the lack of patentable invention in the thing patented.

531½ The bill should be dismissed.

Edwin M. Felt and Edward Wetmore, for the plaintiff.

Charles C. Beaman and Edw'd N. Dickerson, for the defendant.

(Endorsed:) Circuit court of the United States for the southern district of New York. Edward W. Leggett *vs.* The Standard Oil Company. Decision, Shipman, J. May 15, 1889. U. S. circuit court. Filed May 15, 1889. John A. Shields, clerk.

44—225

532 At a stated term of the circuit court of the United States for the second circuit and southern district of New York, held at the rooms thereof, in the city of New York, on the 15th day of May, 1889.

Present: Hon. Nathaniel Shipman, judge.

EDWARD W. LEGGETT, Complainant,
against
STANDARD OIL COMPANY OF OHIO, Defendant. } In Equity.

This cause having come on to be heard at this term of the court upon the pleadings and proofs, and having been argued by counsel for the respective parties—

Now, therefore, on consideration thereof, it is ordered, adjudged, and decreed and the court doth hereby order, adjudge, and
533 decree that the bill of complaint herein be, and the same hereby is dismissed with costs to the defendant, to be taxed.

N. SHIPMAN, *Judge.*

(Endorsed:) U. S. circuit court, south. dist. of New York. In equity. Edward W. Leggett *vs.* Standard Oil Company of Ohio. Decree dismissing bill. Evarts, Choate & Beaman, solicitors for def't, 52 Wall St., N. Y. Edwin M. Felt, sol'r for compl't, 74 B'way, N. Y. U. S. circuit court. Filed May 20, 1889. John A. Shields, clerk.

534 And the costs having been taxed by the clerk at six hundred and fifteen and two one-hundredths dollars ($615.02), the process, pleadings, and decrees, together with other papers filed in said cause, are duly annexed hereunto.

Wherefore let the said Standard Oil Company of Ohio, defendant, recover of said Edward W. Leggett, complainant, the sum of six hundred and fifteen $\frac{2}{100}$ dollars, the cost and charges as taxed.

Signed and enrolled this twenty-eighth day of May, A. D. 1889.

JOHN A. SHIELDS, *Clerk.*

535 [Endorsed:] United States circuit court, southern district of New York. Leggett *v.* Standard Oil Company. In equity. Final record. Evarts, Choate & Beaman, def't's solicitors. Costs, $615.02; total, ——. U. S. circuit court. Filed May 28, 1889. John A. Shields, clerk.

535*a* Circuit Court of the United States for the Southern District of New York.

EDWARD W. LEGGETT
vs.
THE STANDARD OIL COMPANY. }

It is hereby stipulated that the foregoing may constitute the record to be sent by the clerk of this court to the clerk of the Supreme Court of the United States on the appeal to said Supreme Court in

the above-entitled cause, without prejudice to any motion hereafter to be made to correct said record, if any errors shall be found to be contained therein.

New York, Oct. 9, 1889.

EDWIN M. FELT, *Soli. for App'l't.*
EVARTS, CHOATE & BEAMAN,
Sol'rs for Resp't.

(Endorsed:) U. S. circuit court. Filed Oct. 12, 1889. John A. Shields, clerk.

536 Circuit Court of the United States for the Southern District of New York.

EDWARD W. LEGGETT
vs.
THE STANDARD OIL COMPANY. } In Equity.

To the honorable justices of the Supreme Court of the United States:

The appeal of Edward W. Leggett, complainant, respectfully shows—

That on the 9th day of April, 1887, the above-named complainant filed his bill of complaint in the circuit court of the United States for the southern district of New York against The Standard Oil Company, defendant, to enjoin and restrain the defendant from infringing reissued letters patent of the United States No. 5785, granted to complainant, for improvement in lining oil barrels with glue, which letters patent were, prior to the filing of said bill, and continuously since have been, owned by the complainant,
537 said bill praying also for an account of profits and assessment of damages arising from said infringement; that subpœna duly issued out of said court and was duly served on said defendant.

That said defendant filed its answer to the said bill of complaint, to which the complainant filed his replication.

Whereupon such proceedings were had in the cause that on the 15th day of May, 1889, a decree was made and entered by said circuit court wherein it was adjudged and decreed that the said bill of complaint be dismissed with costs to the defendant; which final decree is, as the complainant is advised, erroneous and ought to be reversed.

Wherefore this appellant appeals from the whole of said decree of said circuit court to the Supreme Court of the United States and respectfully prays that the said decree and the bill, answer, replication, pleadings, depositions, exhibits, and proceedings in the said cause may be sent to the Supreme Court of the United States without delay, and that the Supreme Court will proceed to hear the

cause anew, and that the said decree of the said circuit court
538 and every part thereof may be reversed, or such other decree made as to the said Supreme Court shall seem just.

Sept. 11th, 1889.

EDWARD W. LEGGETT,
By EDWIN M. FELT, *Solicitor.*

The foregoing appeal is hereby allowed.
N. Y., Sept. 19th, 1889.

E. HENRY LACOMBE.

(Endorsed:) U. S. Supreme Court. Edward W. Leggett, appellant, against The Standard Oil Company. Petition for appeal to the Supreme Court of the United States. Edwin M. Felt, sol'r for appellant, 74 Broadway, New York. Due service of a copy of within this 23 day of Sept., 1889, is hereby admitted. Sept. 23, 1889.
539 Evarts, Choate & Beaman, sol's for appellees. U. S. circuit court. Filed Sept. 24th, 1889. John A. Shields, clerk.

540 Circuit Court of the United States of America for the Southern District of New York, in the Second Circuit.

EDWARD W. LEGGETT
vs.
THE STANDARD OIL COMPANY. } Bond for Damages and Costs.

Know all men by these presents that we, Edward W. Leggett, of No. 7 East 41st street, in the city of New York; Albert W. Harris, of No. 82 Courtlandt street, in the city of New York, and Charles P. Leggett, of 118 Madison Ave., Plainfield, State of New Jersey, are held and firmly bound unto the above-named Standard Oil Company in the sum of fifteen hundred dollars, to be paid to the said Standard Oil Company, for the payment of which, well and truly to be made, we bind ourselves and each of us, our and each of our heirs, executors, and administrators, jointly and severally, firmly by these presents.

Sealed with our seals and dated the 22 day of July, in the year of our Lord one thousand eight hundred and eighty-nine.

Whereas the above-named Edward W. Leggett has prosecuted an appeal to the Supreme Court of the United States to reverse the decree rendered in the above-entitled suit by the judge of the circuit court of the United States for the southern district of New York:

Now, therefore, the condition of this obligation is such that if the above-named Edward W. Leggett shall prosecute his said appeal to effect and answer all damages and costs if he fail to make his said appeal good, then this obligation shall be void; otherwise the same shall be and remain in full force and virtue.

EDW'D W. LEGGETT. [L. S.]
ALBERT W. HARRIS. [L. S.]
CHARLES P. LEGGETT. [L. S.]

Sealed and delivered and taken and acknowledged this 22 day of July, 1889, before me, by Edw'd W. Leggett and Albert W. Harris, and on 23 day of July, 1889, by Charles P. Leggett.

ROBERT B. ALLING,
[L. S.] *Notary Public* (17), *N. Y. Co.*

541 [Endorsed:] U. S. circuit court, southern district of New York. Edward W. Leggett *vs.* The Standard Oil Company. Bond for costs on appeal to Supreme Ct. Edwin M. Felt, sol'r for compl't, 74 Broadway, N. Y. city. The within bond is hereby approved as to form, amount, and sufficiency of the sureties. N. Y., Sept. 19, 1889. E. Henry Lacombe. U. S. circuit court. Filed Sept. 19, 1889. John A. Shields, clerk.

UNITED STATES OF AMERICA, *Southern District of New York,* } *ss:*

Edward W. Leggett, A. W. Harris, and Charles P. Leggett, being duly sworn, do depose and say each for himself that he is worth the sum of fifteen hundred dollars over and above all his just debts and liabilities.

EDW'D W. LEGGETT.
ALBERT W. HARRIS.

Sworn to this 22 day of July, A. D. 1889, before me—

ROBERT B. ALLING,
[L. S.] *Notary Public* (17), *N. Y. Co.*

Sworn to before me this 23d day of July, 1889.

CHARLES P. LEGGETT.
ROBERT B. ALLING,
[L. S.] *Notary Public* (17), *N. Y. Co.*

542 UNITED STATES OF AMERICA, *ss:*

To the Standard Oil Company, Greeting:

You are hereby cited and admonished to be and appear at a Supreme Court of the United States, to be holden at Washington on the second Monday of October, eighteen hundred and eighty-nine, pursuant to an appeal filed in the clerk's office of the circuit court of the United States for the southern district of New York, wherein Edward W. Leggett is appellant and you are appellee, to show cause, if any there be, why the judgment in the said petition of appeal mentioned should not be corrected and speedy justice should not be done to the parties on that behalf.

Dated September 19th, 1889.

E. HENRY LACOMBE.

(Endorsed:) U. S. Supreme Court. Edward W. Leggett, appellant, against The Standard Oil Company, appellee. Citation.
543 Edwin M. Felt, sol'r for appellant. Due service of a copy of the within citation is hereby admitted this 23d day of September, 1889. Evarts, Choate & Beaman, sol'rs for appellee. U. S. circuit court. Filed Sep. 24, 1889. John A. Shields, clerk.

544 UNITED STATES OF AMERICA, } ss:
Southern District of New York, }

I, John A. Shields, clerk of the circuit court of the United States of America for the southern district of New York, in the second circuit, do hereby certify that the foregoing pages, numbered from one to five hundred and forty-three (543), inclusive, contain a true and complete transcript of the record and proceedings had in said court in the case of Edward W. Leggett against The Standard Oil Company as the same remain of record and on file in said office.

In testimony whereof I have caused the seal of the said court to be hereunto affixed, at the city of New York, in the southern district of New York, in the second circuit, this twelfth day of October, in the year of our Lord one thousand eight hundred and eighty-nine, and of the Independence of the said United States the one hundred and fourteenth.

Seal of U. S. Circuit Court, South. Dist. New York.

JOHN A. SHIELDS, *Clerk.*

Endorsed on cover: Case No. 13,832. S. New York C. C. U. S. No. 225. Edward W. Leggett, appellant, *vs.* The Standard Oil Company. Filed October 19, 1889.

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Office Supreme Court U. S.
FILED.
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JAMES H. MCKENNEY,
CLERK.

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1892.

TERM No. 225.

EDWARD W. LEGGETT,
Appellant,

vs.

THE STANDARD OIL COMPANY,
Appellee.

APPEAL FROM THE CIRCUIT COURT OF THE UNITED STATES FOR THE SOUTHERN DISTRICT OF NEW YORK.

BRIEF FOR APPELLANT.

SAMUEL C. REED,
Complainant's Counsel.

EDMUND WETMORE,
Of Counsel.

C. G. BURGOYNE, Cor. Centre and Walker Sts., New York.

Supreme Court of the United States.

EDWARD W. LEGGETT, Appellant, vs. STANDARD OIL COMPANY.	Oct. Term, 1892. No. 225. Case No. 13,832.

BRIEF FOR APPELLANT.

This is an appeal from a decree of the Circuit Court of the United States for the Southern District of New York, dismissing a bill in equity filed by the appellant against the respondent for the infringement of reissued Letters Patent No. 5785, dated March 10th, 1874, for an improvement in lining oil barrels with glue.

The original bill was filed April 9th, 1887, setting forth the grant and reissue of the patent to the appellant, as inventor, and charging infringement. The answer thereto denies the novelty of the invention set forth in said letters patent, the regularity of the reissue, the sufficiency of the specification and the alleged infringement. By an amended bill filed by leave of the Court, January 14, 1888, the appellant set forth certain dealings between himself and the officers of the respondent, wherein the invention was disclosed to the said officers upon their agreement that, if so disclosed, the respondent would not use the same without the appellant's consent, and alleged that the respondent was thereby equitably estopped from denying the validity of the

said patent, and the respondent thereafter filed a supplemental answer, wherein it denied the said agreement and alleged that if any was made it could not be enforced by reason of the Statute of Limitations and the Statute of Frauds of the State of Ohio, where it was alleged to have been made.

Rec., pp. 1, 5, 11, 12.

The cause came on for final hearing on pleadings and proofs, before his Honor Judge SHIPMAN, who dismissed the bill upon the sole ground of lack of patentable novelty in the patented improvement.

The opinion is printed at page 341 of the record.

The errors assigned are:

FIRST. That the learned Judge erred in holding that there was no patentable novelty in the appellant's process of lining oil barrels with liquid glue at the date of his invention thereof.

SECOND. That he erred in holding that the said invention was merely a commercial suggestion which would naturally occur to a person acquainted with the manufacture of glue.

THIRD. That he erred in that he did not find that the respondent was estopped from denying the appellant's exclusive right to the invention described in said letters patent in suit.

FOURTH. That the decree appealed from is contrary to law, and against the clear weight of evidence.

Summary of Facts.

The invention in question is for an improved method of lining oil barrels with glue.

To line barrels intended to contain hydro-carbon oils, such as kerosene, so that they would not leak (Int. 53, p. 133), and to do so by any method cheap enough (Ints. 145, 146, 147, x-Ints. 735 and 736, p. 83; Int. 51, p. 31; Int. 36 p. 130) for use on a large scale, was a difficult problem; and many ways had been tried and patented prior to Leggett's invention, to accomplish that object. The method most commonly employed at the date of his patent, was to melt the dried glue of commerce in water or steam until a solution of the proper consistency was formed, and then to pour a sufficient quantity into the barrel and roll the latter about until the whole interior was covered (Int. 12, p. 22). This method was practiced on a large scale at the defendant's factory (Int. 11, p. 22). at Cleveland, where from four to six thousand barrels were lined in this way daily (Int. 11, p. 22).

Leggett, who was an inventor, and familiar with the manufacture of glue from his childhood, conceived the idea (Ints. 3, 4, 5, 6, pp. 26, 27), from his experiments and observations, that instead of using the finished product, glue, and then melting it and forming a solution in the ordinary way, barrels might be more efficiently and more cheaply lined by taking the glue "soup," so called, out of which the dried glue was formed, when it had reached a proper consistency in the course of the manufacture, and applying it directly to the inside of the barrels.

Ordinary dried glue, such as had been used in lining barrels, is usually made from the trimmings of skins which come from slaughter houses and tanneries. The skins are soaked in water or lime to remove the fat and grease, and are then thoroughly washed and exposed to the air, or may be treated with a solution of

acid to remove the lime, for the presence of lime, after it has performed its original office, is exceedingly injurious to the glue. The stock is then boiled by the application of steam heat, and when the solution has been formed by boiling, it is run into molds and allowed to set and form a jelly. The jelly is cut into slices, which is spread upon nets and dried.

The drying is necessary in order to make the glue a commercial article for general use. This part of the process is the most difficult, and expensive, because the jelly glue is easily influenced by atmospheric changes; quickly and easily attracts impurities, and readily decomposes and spoils (Int. 146, p. 83; Int. 21, p. 162; Int. 35, p. 130). The patentee describes his invention in the specification of the reissue patent as follows:

"This invention relates to the mode employed for "that of coating or lining the insides of barrels, casks, "&c., and thereby improving the same, for the above-"mentioned purpose; and consists in preparing, from "any glutinous substance, glue soup, said soup being "permitted to attain but a certain consistency, and then "applied directly as a coating or sizing.

"In carrying out my invention I proceed as follows: "Take any of the material from which glue may be "made, and proceed in the usual or any suitable man-"ner for the manufacture of glue, until the soup has "attained a certain consistency."

"This consistency must be considerably less than "that which is required whereby semi-fluid, solid, or "cake glue is to be produced, and while it is in this "half-finished state, so to speak, it is applied directly "to the inside of the barrel or cask, where, after due "evaporation, it will be found that said cask or barrel "is lined thoroughly and completely with the material, "inasmuch as a pressure of steam generated by heat "applied is sufficient to force the thin glutinous fluid "or soup well into the pores, fibers, and recesses of "the wood, thus insuring a perfect lining."

"I am aware that barrels, &c., have been lined or

"coated with glue of commerce, when said glue has "been subjected to a process of reduction by dilution "from its original consistency to a sufficiently liquid "state; but I am not aware of any process wherein the "glutinous material has been permitted to attain only "its proper consistency for the purpose specified, and "then applied directly, thus saving the time, labor, "and expense heretofore employed by continuing the "manufacture of the gelatinous soup until it has "attained a glutinous condition, thus necessitating a "reduction by diluting and reheating before it is fit for "application, as set forth in this specification, traveling "over, as it were, the same ground backward and for- "ward two or three times; whereas, by my process, "this trouble is entirely dispensed with, by operating "as within described.

"This invention has nothing to do with the ordinary "glue-lined barrel, but relates to a new and inexpen- "sive mode or process of making barrels, casks, &c., "better adapted to the purpose designed, by coating "or sizing, as set forth, than by the ordinary means.

"Heretofore glue has been taken in its completed "state as an article of manufacture, reheated, diluted "and then applied; but such a process necessarily car- "ries with it all the expense of preparing the glue at "first as an article of trade or commerce.

"My process contemplates taking the said soup "when at a proper consistency and applying it to the "inside of the package, permitting it to harden for the "first time upon that surface.

"The distinguishing feature of this improvement may "be found, on examination, to be the superior integ- "rity of the lining by the use of soup glue. By its pe- "culiar character it is more freely absorbed by the "wood, penetrating into fiber deeper than by the ordi- "nary mode. Hence the sizing or coating is not only "upon the surface, but penetrates into the wood, "thereby presenting a thicker covering to the action of "the oil, and this sizing is not liable to broken off or

" cracked in handling the cask, as part of the coating is " absorbed into the fiber and cells of the wood, which " gives additional strength to it."

The claims are as follows:

" 1. The within-described process of coating or lin- " ing the inside of barrels, casks, &c., wherein the gluti- " nous material, instead of being produced by reduc- " tion from a previously solid state, is permitted to at- " tain only a certain liquid consistency, and is then " applied to the package and permitted to harden " thereon for the first time, substantially as herein set " forth and described.

" 2. A barrel, cask, &c., coated or sized by the ma- " terial, and by the mode or process, whereby it is " absorbed into and strengthened by the wood fiber, " substantially as herein described."

About a month before the date of the patent, Mr. Leggett had an interview with Mr. Rockefeller, Mr. Flagler and Mr. Paine, officers of the defendant the Standard Oil Company, at Cleveland, Ohio, in which he told them that he had a process for lining oil barrels, which he would disclose upon their promise (Int. 45, p. 30) that they would not use his process in any manner, shape or form whatsoever without his consent. They assented to this, as Mr. Leggett testifies, and his testimony on this point is not effectually denied, and he, thereupon, disclosed to them the process, substantially as described in the specification. A few months after this interview the defendant began using the process, and has used it continually up to the present time. Mr. Leggett protested against this, in writing, in January, 1874, but owing to his limited means he was unable to begin suit until the 9th day of April, 1887.

FIRST POINT.

As to the Patentability of Plaintiff's Discovery and Prior State of the Art.

The learned Judge at Circuit, in his opinion dismissing the bill, says: "That the plaintiff, from the fact "that he was the first person who showed the public "either to use or how to use the liquid glue for the "inside of barrels, by which a better result and a large "saving of expense were effected, would be entitled to "the benefits which the statutes confer upon first in- "ventors if he had given to the public the result of in- "vention and not merely commercial suggestions which "would naturally occur to a person acquainted with "the manufacture of glue." And later says: "There "was no novelty in the idea of the superiority or "economy of hot liquid glue and so much of the "claim of the patentee to the character of an inventor "as rests upon the discovery of the superior integrity "of the lining by the use of soup glue is fallacious. "Liquid glue had never been manufactured before for "daily use, simply because nobody needed a large daily "supply." "The thought that the defendant, which was "a large daily consumer, could profitably be its own "manufacturer of glue came both to the patentee and "to Mr. Plumer, who also subsequently communicated "the same idea to the defendant, but neither is entitled "on that account to be considered an inventor, but "each is rather to be regarded as having prompt ability "to seize upon correct methods of conducting a large "business."

Let us examine the first position assumed by the learned Judge, "that what the patentee gave to the "public was not the result of invention, but merely a "'commercial suggestion' which would naturally occur "to a person acquainted with the manufacture of glue."

The complainant is the original and first inventor of

a new and useful improvement in lining oil barrels with "soup glue." There is no evidence whatever introduced by the defendant, save certain cases of prior use, which will be hereafter referred to, going to show that any person who was then manufacturing or using glue conceived the idea that "soup glue" could be used for the lining of barrels holding hydro-carbon oil. In fact, the testimony is exactly to the the contrary. *No one believed it could be done.* Not only did not the glue manufacturers believe, but the oil manufacturers as well. It will be shown later what the officers of the defendant company thought, from their conversations with Wm. Plumer, a witness for the plaintiff, concerning the Leggett Patent; to Leggett himself they doubted, when he laid his process before them in 1873, whether it would answer the purpose; "*they doubted* "*very much whether such glue could be used; they* "*thought the glue must be dried or it would not answer* "*the purposes.* I assured them that it would, and they "said they would consider the matter further, and "wanted to know when I would be next in Cleveland" (Ans. to Int. 46, p. 30).

The plaintiff was asked the following questions: "Before your discovery did you know of any oil refin- "ers using 'soup glue'?" Ans. "I did not; no, sir." "What did they think of your discovery, and so "state?" "I visited the Central Oil Refinery, of "Pittsburgh; also R. I. Waring and R. I. Brown. "*They would not believe it would work; they doubted it* "*would work;* in fact, all of them that I talked to, for "a long time. I had very hard work to convince them "it would work, and so I did the officers of the "Standard Oil Company, the defendant" (Ans. to Ints. 123, 124, 125, 126, p. 81).

The plaintiff went to the works of the Central Oil Refining Company, in Pittsburgh, bought glue stock and made his soup glue, and glued some of their oil barrels to convince them it would work, which they would not believe (Ans. to x-Int. 765, p. 85).

And in answer to interrogatory 5, page 26, the plaintiff says: "I talked with glue manufacturers whether "it was necessary to dry glue, and they, generally, "considered it was necessary. *They had an idea the* "*drying process gave the glue a different quality.*"

The learned Judge at Circuit, entirely misapprehending the testimony, says: "The use of such glue came "naturally, and in the ordinary line of thought to Wie- "derhold when the occasion came to him to line bar- "rels."

Weiderhold did, several years after the issuance of the Leggett Patent, line a few barrels, holding neat's-foot oil, with "soup glue," but the evidence shows that he received the idea from Leggett, for the plaintiff swears that he talked with him, among other glue manufacturers, concerning the superior virtues of "soup glue" *and that he doubted whether it could be used.* x-Int. "When you glued a piece of wood together did you "expect it to fall apart?" Ans. "No, sir; I don't "think I did." x-Int. "Nothing in your past history "that would make you think it would fall apart?" Ans. "I did not think it would fall apart, but there "was a good deal in my past history which made me "think it would not be as good." x-Int. "What in your "past history?" Ans. "My talks with different glue "manufacturers." x-Int. "Who had you talked with?" Ans. "*I had talked with Mr. Wiederhold*—well, I can't "tell the number of manufacturers I talked with." (x-Ints. 433, 434, 435, 436, p. 60.) There is not one word of testimony in the case to show that the use of soup glue came naturally to Wiederhold.

Now let us see whether it came also to Plumer. This very intelligent witness for the plaintiff was at this time a glue manufacturer in Gloucester, Massachusetts. As appears by defendant's Exhibit A, Mr. H. M. Flagler, the secretary of defendant company, had written him on the 15th November, 1873; the letter, however, is not put in evidence. In Plumer's reply on the 19th Novem-

ber, he suggests to Mr. Flagler that he should make "soup glue" and use it, and save the expense of drying it. Mr. Plumer was the inventor of an *elastic glue*, which he had made by certain additions to gelatine: a product which resembled india-rubber, and which was very elastic and would keep in that condition for a long time (see answer to cross-int. 207, p. 155). It was expensive.

We desire to call the attention of the Court to the fact that the plaintiff's disclosure of his discovery to the officers of the defendant company was in September, 1873, and it was two months afterward when Flagler wrote to Plumer concerning the manufacture of glue, and asking him to come to Cleveland and talk with them on the subject. Now, although Plumer wrote thus, prompted by the letter from Flagler, yet he did not know, and was not at all certain that soup glue could be used, for in answer to Int. 9, p. 22, he says that, after he had entered the employ of the defendant and first made this "soup glue," he "*had a lot of kegs* "*made and tested them with different consistencies, and* "*found that consistency which, in my judgment, was the* "*best.*"

But this very intelligent glue manufacturer had, however, *never, prior to the 8th January, 1874, when he entered the employ of the defendant, seen a barrel lined with glue*, and only a short time before had his attention been called to the fact that barrels were so lined (Ans. to Int. 39, p. 131). He, however, emphatically states "that had I known at any time that there was "such a demand for liquid glue, and had I possessed "the knowledge which I subsequently obtained of this "demand while at Cleveland, and did not know "that Mr. Leggett had already obtained a patent for "the same or a similar process, I should most cer- "tainly have applied for a patent, as I should have "thought it of great pecuniary value" (Ans. to Int. 222, p. 158). This witness, who had been brought to Cleveland, and his expenses paid for the purpose of

talking over the subject of making this soup glue (see Deft.'s Ex. Flagler Letters Nos. 1 and 2, p. 317), says that he visited with Mr. Flagler, one of the officers of defendant, the works of the Standard Oil Company at Cleveland on January 4th, 1874, and was introduced by him to Mr. Andrews, the general manager of the works. He, in their company, visited the glue room and was shown the whole process of gluing barrels. "After having seen this process [they were using "dry glue at this time remelted], I was asked if I could "manufacture a liquid glue which would answer the "purpose. Having tested the consistency of the glue "with my fingers, I replied that I believed it would "answer the purpose. It was during the time of the "conversation with Mr. Flagler and Mr. Andrews that "Mr. Flagler, I think, said that *one Leggett had a "patent for manufacturing liquid glue, and was desirous "of introducing his patent to the Standard Oil Co.*" (Int. 43, p. 132).

"Were there any doubts expressed by the officers of "the company defendant as to whether the Leggett pro-"cess could be successfully used, and, if so, what was "said, and by whom?" Answer. "BOTH MR. FLAGLER "AND MR. ANDREWS WERE VERY ANXIOUS TO KNOW IF I WAS "POSITIVE I COULD MAKE LIQUID GLUE THAT WOULD ANSWER "THEIR PURPOSE." And in answer to Cross-interrogatory 144, page 145, said: "I KNOW IT REQUIRED HOURS OF "ARGUMENT AND DAYS OF TIME TO PURSUADE THE STANDARD "OIL COMPANY, AND WHO WERE ALREADY USING TONS OF "GLUE, TO BECOME MANUFACTURERS OF THE ARTICLE." (x-Int. 145, p. 145): "Did you finally persuade them to do it?" Answer. "I persuaded them to build a "factory for that purpose, and I KNOW UNTIL THE GLUE "WAS ACTUALLY PRODUCED AND BARRELS GLUED WITH THIS "LIQUID GLUE THAT THEY HAD SERIOUS DOUBTS WHETHER IT "WOULD ANSWER. This question, whether I could pro-"duce glue that would answer, was repeatedly discussed "between John D. Rockefeller, the president of the "company; Mr. Flagler, Mr. Andrews and myself.

" When the first boiling of glue was made, MR. FLAGLER, " MR. ANDREWS, AND, I THINK, MR. ROCKEFELLER, WERE " ALL PRESENT, AND TOOK GREAT INTEREST IN THE RESULT ;" and, in answer to the next Cross-interrogatory 146, said : " THEY QUESTIONED IN THE BEGINNING WHETHER " ANY ONE COULD PRODUCE LIQUID GLUE THAT WOULD AN- " SWER."

And yet in answer to all this the learned Judge at Circuit says that " liquid glue had never been manu- " factured before for daily use simply because nobody " needed a large daily supply, and that the idea of so " using it was a business rather than a mechanical sug- " gestion." The evidence it is submitted does not justify this contention.

No oil refiner nor glue manufacturer believed that soup or liquid glue possessed the qualities that the plaintiff discovered it had, and which qualities he discovered after long experiment and observation, and which he enumerates as follows in answer to Int. 115 (p. 80) : " The distinguishing feature of my discovery " was the superior integrity of a lining made by the use " of soup glue. By its limpid character it is more " freely absorbed by the wood, and more penetrating " than glue dried and then remelted. It being more " penetrating, it enters the pores of the wood deeper " than dried glue, and not only enters the pores of the " wood, but upon the surface presents a stronger " covering of glue to the action of the oil, and being " more elastic than the ordinary glue, and more " penetrating, it is not so liable to crack when the barrel " is handled, thus making in all a stronger lining."

Concerning the relative merits of the two systems in the use of dry or liquid glue, with the latter there has been no recorded instance of weakness or loss, but with the former, Mr. Plumer testifies (Int. 53, p. 133): " I remember one important case where there was " great leakage. I was informed there was a leakage " to an amount of $20,000 in a shipment to New York

" while I was building the factory. There was a dis-
" pute between Wiggin, the superintendent of the
" barrel factory, and Hopper, the superintendent of the
" glue room, as to who was responsible. They were
" both sent for, and went to New York, and there was
" considerable trouble about it. How it was settled I
" don't know."

It is *now* admitted by all that this soup glue, boiled to a certain consistency, is far superior to any other method. Plumer admits it (Int. 38, p. 130); says it is stronger and better because it is perfectly fresh and never decomposed; and, in answer to x-Int. 59, page 112, witness Wiederhold now says, after he has had his conversations with Leggett as to its utility, having himself doubted it before, " liquid glue is more penetrat-
" ing. Glue that has never been dried is more penetrat-
" ing—free from all lumps." " A fresh liquid glue is
" better for any purpose for which glue is useful than
" glue which has just been hardened and remelted"
(Ans. to x-Int. 62, p. 112).

King Upton, a very intelligent witness for the plaintiff and the third largest glue manufacturer in the country, says as to the virtues of " soup glue," in answers to interrogarities 19 and 20 (p. 162), " the soup glue will
" penetrate further than melted glue," and gives an instance in his business, and later says, " As the soup
" glue contains a larger amount of gelatine than the
" same amount of soup glue would contain if dried, and
" also will penetrate better, I should think it would
" make a better lining for oil barrels;" and in answer to interrogatory 19 (p. 162), gives a remarkable instance he made in 1884 as to its penetrating effects as compared with dry glue melted. All of these experts renowned in the art, although thus now publicly admitting the facts relative to the superior virtues of soup glue as discovered by the plaintiff, yet not one of them had ever discovered it before their attention had been called to it through the Leggett Patent.

By Mr. Leggett's discovery—that soup glue "boiled "to a consistency considerably less than that which is "required, wherein semi-fluid, solid or cake glue is to be "produced, and, while in this half-finished state, is ap- "plied directly to the inside of the barrel or cask, where, "after due evaporation, it will be found that said cask or "barrel is lined thoroughly and completely with glue, in- "asmuch as a pressure of steam generated by the heat ap- "plied is sufficient to force the thin, glutinous fluid well "into the pores and recesses of the wood, thus insuring "a perfect lining"—not only a far superior article than the remelted dry glue of commerce has been found, but the cost of making the latter been saved, which, as has been shown, amounts to ten cents per pound.

It is well understood that glue is a most peculiar substance, and has even now many characteristics but little understood. In the latter part of its manufacture into the dried state there is great liability, in case of foggy, murky weather, of its deteriorating, spoiling and souring, causing great loss; sometimes in bad weather the whole boilings have to be thrown away (Int. 146, p. 83; Int. 21, p. 162).

All this great loss and additional cost in the manufacture has been saved, besides the discovery of the far superior quality of soup glue.

Let us examine, for a moment, as to the utility of this discovery. There are hardly in the country any refiners of oil save the Standard Oil Company, and they use this soup glue in their various factories to the extent of lining many thousands of barrels of oil daily. As long ago as 1874, when the witness Wm. Plumer went to Cleveland to work for them, they lined at that one factory between 4,000 and 6,000 barrels daily (Ans. to Int. 11, p. 22), and he states, in answer to Int. 220, page 157, that a gallon of liquid glue would contain one and six-tenths pounds of dried glue, and that not more than three barrels, at the most, could be lined properly with one gallon of this liquid glue. The sav-

ing which could be effected (see Ans. to Int. 51, p. 31) was ten cents per pound, which would amount, on 4,000 barrels only a day, to at least $60,000 per annum, and at the present time, at their various factories, they are lining many times that number.

Thus it appears that neither the oil refiners or glue manufacturers engaged in lining barrels or furnishing the materials therefor knew before Leggett's invention that glue soup could be used for lining barrels. They did not know that it was practical or useful to line them in that way. Furthermore, no one ever did so before Leggett (We disregard the alleged specific anticipations in discussing the prior state of the art, they are considered by themselves). The public did not know it.

It was an unknown process in the art of lining barrels. It has saved hundreds of thousands of dollars. Why is it not patentable ?

Why, is it not a discovery to ascertain that the way described in Leggett's patent to line oil barrels is an effective and useful way of lining barrels whereby both a vast saving can be effected and a better result accomplished ? For the result is not only cheaper but better, because the glue soup is, as Mr. Plumer states, better for lining barrels because " it is stronger, never having been reheated," and because it is freer from the defects arising from decomposition (Ans. to Int. 38, p. 130).

In view of all these facts, the disbelief of every one in the possibility of using this soup glue until Leggett discovered in it these great advantages, and practically applied them, thus saving a great step in the process of manufacture, and for which this Court has, in repeated instances, sustained patents ; in view of the fact that the glue manufacturer Wiederhold doubted (x-Int. 436, p. 60) whether it could be successfully used (to be sure, he did line a few neat's-foot oil barrels some years after the issuance of the Leggett Patent, but it was long after his conversation with Mr. Leggett and the latter's contention with him as to its prac-

ticability); in view of the further fact that the witness Wm. Plumer never saw a barrel lined with glue until he went to Cleveland, Ohio, in January, 1874, and never thought of the advantages of using such soup glue until he received the letter from Mr. Flagler, secretary of the defendant company, on the 15th November, 1873, after the latter had had his interviews with the plaintiff on the subject—how can the contention of the learned Judge at Circuit be sustained? or the further contention "that there was no novelty in "the idea of the superiority or economy of hot "liquid glue." There is no question that but for the plaintiff's discovery the defendant company would have continued to use, as they were then using, the dried glue of commerce, with all its multiform disadvantages.

Why is it that, if it was simply a "commercial sug- "gestion," as the learned Judge at Circuit finds, that none of the great glue manufacturers suggested its use, or the great oil manufacturers adopted it, if they believed in it? They did not so suggest or adopt, because they did not believe in its virtues or superiority, or that it would answer the purpose of lining barrels holding that most penetrating of all substances, hydro-carbon oil. As the patentee states, "they "thought the glue must be dried or, it would not an- "swer the purposes."

In view of the facts, as stated from the evidence, of the difficulty of getting the defendant company to manufacture liquid glue, after they had been told of all its advantages over the dried glue of commerce, of the doubts of the Central Oil Refinery, of Pittsburgh, also Messrs. Waring & Brown, all at that time large manufacturers of refined oil, relative to the practicability of its use, how can the opinion of the Court below be sustained that liquid glue had never been manufactured before for daily use simply because nobody needed a large daily supply?

And, we think, the Court below misapprehends the evidence in the case when it says as follows: "The

" thought that the defendant, which was a large daily " consumer, could profitably be its own manufacturer of " glue, came both to the patentee and Mr. Plumer, who " also subsequently communicated the same idea to the " defendant, but neither is entitled on that account to " be an inventor, but each is rather to be regarded as " having prompt ability to seize upon correct methods " of conducting a large business."

Now, Plumer never communicated any idea of the kind to the defendant until Flagler wrote him on the 15th November; AT THIS TIME PLUMER KNEW NOTHING ABOUT LINING OIL BARRELS WITH GLUE, AND HAD NEVER SEEN ONE LINED (see Ans. to Int. 39, p. 131), and *he was in doubt about it himself, as seen from the fact of his trying it upon some kegs to see whether it would work. This he did on his arrival in Cleveland* (Ans. to Int. 9, p. 22). *So the idea did not occur at the same time to both the patentee and Mr. Plumer, as the learned Judge states.*

The plaintiff is an inventor. He has made several inventions for which he has been granted Letters Patent (Int. 10, p. 27); his attention was early called to new processes of glue manufacture. He studied glue in its nature and character and was for years experimenting thereupon (Int. 5, p. 26) and although no one believed there was any virtue, unless in the dry form—the glue of commerce—by his careful discerning experiments he discovered remarkable properties in glue soup that is, *before in the boiling it had attained a consistency necessary to make dry glue*—that eminently fitted it for the important purpose of holding hydro-carbon oil. He discovered that it possessed greater tenacity and penetrating effect upon the pores of the wood than dried glue remelted and that it could be made at a saving of fifty per centum less than the glue of commerce for the uses of the oil refiners.

The learned Judge at Circuit says (p. 344): "It "must be regarded as proved that, before the date of "the invention, practical experts believed that remelted "dried glue was inferior in adhesiveness and binding "qualities to hot and undried glue. Thus it was "stated in 'Wagner's Yearly Report of Chemical Tech- "nology' for 1869, Vol. 15, page 657, that the adhesive "and binding power of glue is greatly diminished in "the process of drying in the air."

While it was well known before the date of Leggett's discovery that glue, by successive remeltings, was greatly weakened in tenacity and binding force, yet the evidence does not sustain the further contention that practical experts believed that it was inferior to hot and undried glue, or that the latter, hot from the tubs, was in the best condition and would penetrate better, or would be better for any purpose, much less for that of lining barrels holding hydrocarbon oil. On the contrary, as we have seen, until Leggett showed him the advantages of using soup glue, Wiederhold would not believe it could be used at all; and Plumer, although a very intelligent glue manufacturer, was not at all certain it would do, for he had never lined a barrel with glue of any kind, and as he says (p. 22, Int. 9), he "had a lot of kegs made and "tested them, &c." It was not until 1884 that King Upton made his experiment proving its greater value, and the learned Judge practically admits all this when he says later "that, inasmuch as the plaintiff was the "first person who showed the public either to use or "how to use the liquid article for the inside of barrels, "by which a better result and a larger saving of "expense were effected, he would be entitled to the "benefits which the statutes confer upon first inventors "had it been the result of invention."

We submit that there is no evidence in the case showing that, before the date of the plaintiff's discovery, there were any experts who knew, from practical experience or otherwise, that liquid or soup glue was

better than dry glue remelted, or could be used for the purposes designated in Leggett's Patent.

The use of glue to line oil barrels is unique. None of its ordinary uses as a sizing or as a means of sticking woods or other materials together are the same as that of serving to coat and render impervious to oil the inside of an oil barrel. It was a great problem to find something to line the interior of an oil barrel. Defendant's counsel referred to the patents granted for this purpose, and it is stated in "Knight's Mechanical Dictionary" that there are many patents for modes of coating oil barrels and compositions therefor (2 Knight's Mechanical Dictionary, p. 1558). It did not follow because dried glue remelted would serve to coat an oil barrel that glue taken hot from the boiler would serve the same purpose. *Non constat*, they would dry alike on the inside of the barrel, and on the drying largely depends the integrity of the coating. If the coating peels off or becomes too hard, or jellies instead of hardening, or cracks at the joints of the staves, it will not do, and who could tell whether the one solution would serve because the other did? The solutions differed in respect to their union with the water of composition entering into them—who could say how this fact would affect their forming a coating on the inside of the barrel?

It is very certain that prior to Leggett's invention no one knew that glue soup taken from the boiling pot could be used to line oil barrels, and those experienced in lining oil barrels did not think it would serve the purpose.

Neither is the Court below correct, as we have stated above, when it says "that the use of such glue came "naturally and in the ordinary line of thought to "Wiederbold when the occasion came to him to line "barrels." As we have seen above, until the patentee Leggett informed him he had done it, he would not believe it (x-Int. 436, p. 60).

After the officers of the defendant company had been informed by Leggett of the importance of his discovery, if they could get Plumer to come to Cleveland and make a soup glue that would do the work they could avoid paying Leggett. As stated, Plumer had never given the matter a moment's thought, for he knew nothing about it, and, as he states, had never seen a barrel lined with liquid glue or any other kind; all he was trying to do was to introduce to the public his elastic glue; but when Flagler wrote him concerning the properties of liquid glue, being a very intelligent man, he at once answered him he believed it would do the work, and, as he says in answer to Int. 222, p. 158, when he saw the great use to which it could be put, "had not Mr. Leggett applied for and obtained a "patent for the discovery of its excellence, I should "most certainly have done so."

From the testimony, it appears that hydro-carbon oil is one of the most penetrating of all substances (Int. 53, p. 133; Int. 221, p. 157), and one of the most difficult to hold in barrels. It had long been the custom of the defendant and other oil refiners to take the dry hard glue of commerce, melt it down to the proper consistency, and then apply it as a coating to the inside of their oil barrels.

As has been stated, it was a very expensive process, for glue in 1874 was worth 24 cents per pound, and it would only glue three barrels, and the defendant was then lining at their one refinery in Cleveland, Ohio, six thousand every day. The most precarious part of the manufacture of glue is the drying process (Int. 35, p. 130; Int. 21, p. 162), and great losses result from it; these losses, together with the cost of handling, &c., amounted in 1874 to ten cents per pound (Int. 117, p. 80; Int. 36, 130). Prior to the issuance of complainant's letters patent the nature and character of glue had been but little understood; why it was that it spoiled so rapidly and often during the drying process;

why dampness and cloudy weather were so injurious; why thunder storms often entirely ruined it, no one could answer, and even now glue, to a great extent, is a mystery. That the adhesive properties of glue have been known for a long time is obvious and also that what is known as sizing (a weak solution of glue that will not dry upon the nets and, therefore, that cannot be made into the hard, dry glue of commerce Int. 219, p. 157), joined with alum was used by wall paper manufacturers to size or stiffen their products prior to the issuance of complainant's patent.

But prior to 1873 liquid glue was not considered as possessing the adhesive properties of glue that had been dried. But where great strength combined with limpidity was required, as in the case of barrels holding hydro-carbon oil, it was not considered by any of the refiners that it could possibly be used with safety (Int. 125, p. 81).

The officers of the defendant company told the complainant that they did not believe it could be used (Int. 126, p. 81), nor did they believe him when he told them that by his process he did not propose to boil the glue to the consistency required to make hard glue, and that it would answer better for the lining of oil barrels. Plumer, as we have seen, relates what hard work he had in convincing the officers of the defendant company that soup glue could be used, and until the glue was actually produced, and barrels glued with this liquid glue, they had serious doubts whether it would answer. And then as soon as adopted we see the great benefits of the complainant's discovery. The doubters were convinced—not only glue manufacturers, but oil makers as well. The liquid glue was found more limpid, and owing to its peculiar character was more freely absorbed by the wood penetrating into the fibre deeper than by the ordinary mode. Hence, the coating being not only upon the surface, but penetrating deeper into the wood, presented a thicker covering to the action of the oil, and was not liable to be broken off or cracked in hand-

ling the cask or barrel, as part of the coating being absorbed into the fibre and cells of the wood gave it additional strength.

This was complainant's imrpotant discovery. Practically, it not only gave a vastly better lining, but all the cost of drying the glue with the losses resulting therefrom were saved. We have seen how much it saved the defendant at their one factory alone in Cleveland. Nothing more has ever been heard of since its adoption from leaking barrels, and their enormous resultant losses.

Section 4886 of the Revised Statutes of the United States provides that he may have a patent "who has invented or discovered any new and useful art, machine, manufacture or composition of matter, or any new and useful improvement thereof."

Merwin on Patentability of Inventions (p. 39) says:

"Here we cannot refrain from noticing the scientific "basis thus afforded for the doctrine of utility as evi- "dence of invention under the patent law. *If by a slight "change an improvement is made that amounts to a "decided advance in some art or industry, the courts "look upon it with favor, and they find invention in it if "they can.*"

Webster on Patents (p. 86):

"The history of invention presents many instances "of very important results produced by changes appar- "ently trifling and insignificant. The steam printing "machine was on the point of being abandoned from "a defect which was entirely obviated by setting the "inking rollers in a slightly oblique position. The im- "mersing cloth in hot water and the shearing it in one "direction, as from list to list, instead of from end to "end, increased very greatly the value of the cloth so "dealt with."

He further says (Sec. 10): "In these cases the sub- "ject of the invention is not the particular machinery

" or apparatus by which the new application is made to " be available, but it is the new application itself of " certain known substances as agents to produce a " particular result, differing either in the process or in " the article produced from the former methods of " producing the same thing, and *thereby producing a* " *better article or producing it by superior or cheaper* " *processes.*

" It is obvious that the results in such cases furnish " a complete test of the sufficiency of the invention, " because the importance of the result shows that, " whether actually exercised or not, the possibility of " the exercise of thought, design, ingenuity and skill is " not excluded."

The same authority says (p. 30): " The utility " of the change, *as ascertained by its consequences, is* " *the real practical test of the sufficiency of an invention;* " and since the one cannot exist without the other, the " existence of the one may be presumed a proof of the " existence of the other. Where the utility is proved to " exist in any degree, a sufficiency of invention to sup- " port the patent may be presumed."

Mr. Justice STRONG, in giving the opinions of the Court in the case of Smith vs. Goodyear Dental Vulcanite Company, 93 U. S. R., says, quoting the above:

" We do not say the single fact that a device has " gone into general use establishes in all cases a patent- " able invention. It may, however, always be consid- " ered, and when the other facts in the case leave the " question in doubt, it is sufficient to turn the scale."

The law relating to processes was fully settled in the case of Tilghman vs. Proctor, 102 U. S., 722. Tilghman's patent was for a process for separating fatty bodies into their component parts—fat, acids and glycerine—by subjecting them in a close vessel to the action of highly heated water under a pressure that would prevent its conversion into steam. It was known

before Tilghman's discovery that the elements of neutral fat require to be united with an atomic equivalent of water in order to separate from each other and to become free. This principle, therefore, was known. But Tilghman discovered that the separation might be effected by the action of highly heated water under the conditions above mentioned. The Court held this to be a process, and that any apparatus to carry out this process would be an infringement of the patent.

Mr. Justice BRADLEY, in giving the opinion of the Court in this well-known case, says :

" That a patent can be granted for a process there " can be no doubt. The patent law is not confined to " new machines and new compositions of matter, but " extends to any new and useful art or manufacture. A " manufacturing process is clearly an art within the " meaning of the law. Goodyear's patent was for a " process. Neilson's patent was for the process of ap- " plying the hot blast to furnaces by forcing the blast " through a recepticle heated to a red heat. These " patents were sustained after the closest scrutiny and " against the strongest opposition."

He then quotes the opinion of the Court in Corning vs. Burden (15 How, 267): " Where the result or effect " is produced by chemical action by the operation or " application of some element or power of nature, or of " one substance to another, such modes, methods, or op- " erations are called processes. A new process is usually " the result of discovery, a machine of invention. One " may discover a new and useful improvement in the " process of tanning, dyeing, etc., irrespective of any " form of machinery or mechanical device. As, for in- " stance, A has discovered that by exposing India rub- " ber to a certain degree of heat, in mixture or in con- " nection with certain metallic salts, he can produce " a valuable product or manufacture he is entitled to a " patent for his discovery as a process or improvement " in the art. B, on the contrary, may invent a new fur- " nace or stone or steam apparatus by which this process

"may be carried on with much saving of labor and ex-
"pense of fuel and he will be entitled to a patent."

Speaking of Neilson's patent he said "that Neilson's
"discovery that a hot blast was better than a cold blast
"for smelting iron, being nothing but a principle, he
"could not have a patent for that, but having practi-
"cally exemplified a process for utilizing this principle,
"he was entitled to a patent."

Quoting the opinion of the Court in O'Reilly vs. Morse (15 How, 62, Taney, C. J), "Whoever discovers
"that a certain useful result will be produced in any
"art, machine, manufacture or composition of matter
"by the use of certain means is entitled to a patent for
"it. And it makes no difference in this respect
"whether the effect is produced by chemical agency or
"combination; or by the application of discoveries or
"principles in natural philosophy known or unknown
"before his invention."

Judge Bradley continues as follows: "The 'means'
"may be a *process*. The last is a conception of the
"mind seen only by its effects when being executed or
"performed. The mixing of certain substances to-
"gether, or *the heating of a substance to a certain tem-*
"*perature is a process*. If the mode of doing it, or the
"apparatus in, or which it may be done, is sufficiently
"obvious to suggest itself to a person skilled in the
"particular arts it is enough in the patent to point out
"the process to be performed without giving super-
"erogatory directions as to the apparatus or method
"to be employed."

In the well-known case of Crane vs. Price, the English Court of Common Pleas (1 Web. Pat. Cas., 393, 410), upheld a patent for using anthracite instead of bituminous coal with the hot blast in smelting iron ore: the evidence, as Chief-Justice Tyndall remarked, "proved beyond doubt that in the result of the combi-
"nation of the hot-air blast with the anthracite not only
"was the yield of the furnace more, and the expense of

"making the iron less, but the *nature, property and* "*qualities of the iron were better than under the former* "*process* by means of the combination of the hot air- "blast with bituminous coal."

This case has been frequently cited approvingly in this Court.

In the case of Smith vs. Goodyear Dental Vulcanite Company (93 U. S., 493), STRONG, J. In this case a patent had been granted for a plate of hard rubber for holding artificial teeth. The materials employed—the teeth, the wax, the plaster, the molds, the soft rubber and the hard rubber—were none of them new, and it was also true that the steps in the process were not all new. Plaster had been used for the formation of molds, and the process of forming a plate by the use of such molds was well known, and so also the process of heating it and allowing it to cool in molds, but he imbedded the teeth in a vulcanizable compound, so that it should surround them while in a soft state before it was vulcanized. But as the Court say they were better and cheaper.

"To us it seems not too much to say that all these "peculiarities are sufficient to warrant the conclusion "that devising and forming such a manufacture by such "a process and such materials was invention. *More was* "*needed for it than simple mechanical judgment and* "*good taste.*"

We submit that in the discovery made by complainant in this suit, that barrels could be lined with glue soup, there was much more needed than mechanical judgment and good taste.

In Boulton vs. Bull (2 H. Black, 463), King's Bench, Chief Justice EYRE held "that a patent can *be had for* "*a process, if it be a new method of operating, with or* "*without old mechanism, by which the effect is pro-* "*duced;* and to produce effects in any art, trade, "mystery or manual occupation, there may be a pat-

" ent." This involved Watt's Patent, which was for a new method of lessening the consumption of fuel and steam in fire engines. He also observed in another part of his opinion, " that the advantages to the public " from improvements of this kind are, beyond all calcu- " lation, important to a commercial country; and the " ingenuity of artists who turn their thoughts toward " such improvement is in itself deserving of encourage- " ment."

Gas has been made from seeds containg oil, by first pressing the oil out of the seeds and then projecting it upon incandescent retorts. *The patentee discovered that the first process was unnecessary, and his patent for extracting gas directly from seeds was held to be valid.*

Booth vs. Kennard (1 H. & W., 527), Ex. cheq. Chamb.

" The result which has been produced may be con- " sidered in connection with the change, because the " result is greatly more beneficial than it was with the " old contrivance, reflects back and tends to charac- " terize in some degree the importance of the change."

Hall vs. Niles (S. D. of N. Y.), 2 Blatch., 194, NELSON, J.

In the appeal of Joseph R. Pennock, S. C., 5 Off. Gaz., 668:

Mr. Justice MCARTHUR, in his opinion in this case, quotes approvingly an article on patents in the Encyclopædia Britannica, as follows:

" A small amount of invention is indeed sufficient to " support a patent where the utility to be derived from " the result is great. A small step in advance, a slight " deviation from known processes, may have been ap- " parently brought about by the exercise of little inge- " nuity; *but if the improvement be manifest either as " saving time or labor, a patent in respect to it will stand. " The mere omission of a step from some commonly prac- " ticed process has been held sufficient to support a patent " for a new method of manufacture,* and how often do

" we see what appears to be a very trifling degree of " novelty attended with a very advantageous conse- " quences, sometimes resulting in the entire revolution " of a manufacture or in a lowering of price appreciable " in every pound of an article extensively used by the " public."

The principles of the foregoing cases has been reaffirmed and applied in this Court in the case of *Lawther vs. Hamilton* (124 U. S., 1).

In that case the bill was dismissed in the Court below and the patent held invalid for want of novelty. The patent was for an improvement in the process of working oil seeds so as to extract the oil from them, which consisted in crushing the seeds between stones and subsequently applying heat and moisture.

The Court below said :

" The crushing of oleaginous seeds, so that ultimately " it may be in condition for the application of hydraulic " pressure, was always a step, and necessarily the first " step in the process of extracting the oil therefrom. " As we have seen, that step was formerly accomplished " by means of rollers and muller-stones. The complain- " ant ascertained by practice, that in crushing the seed, " the tearing, pulverizing action of the muller-stones " was injurious, and so he dispensed with that mechani- " cal operation in the crushing step of the process " and employed the rollers alone. He thereby simply " omitted one of the instrumentalities previously used " in the first stage of treatment of the seed. This was " undoubtedly a useful improvement, but it was not the " invention or discovery of a new process."

Held, that the Court was in error in dismissing the bill. Judge BRADLEY, giving the opinion, after quoting the above extract from the learned Judge's remarks in the lower Court, says :

" The view thus taken by the Court below seems to " us open to some criticism. If, as that Court says, and " we think rightly says, the omission of the muller-

" stones is a real improvement in the process of obtain-
" ing the oil from the flaxseed; if it produces more oil
" and better oil cakes, and it is new, and was not used
" before, why is it not a patentable discovery? and why
" is not such new method of obtaining the oil and
" making the oil cakes a process? There is no new
" machinery. The rollers are an old instrument, the
" mixing machinery is old, the hydraulic press is old;
" the only thing that is new is the mode of using and
" applying these old instrumentalities. And what is
" that but a new process? This process consists of a
" series of acts done to the flaxseed. It is a mode of
" treatment. The first part of the process is to crush
" the seeds between rollers. Perhaps, as this is the
" only breaking and crushing of the seed which is done,
" the rollers are required to be stronger than before.
" But, if so, is it no less a process? * * * Why
" should it be doubted that such a discovery is patent-
" able?"

124 U. S., 6, 7.

The case of Magowan vs. New York Belting Co., 141 U. S., p. 332, Mr. Justice BLATCHFORD delivering the opinion, bears also in many respects favorably upon the case now before the Court. This was a patent for an improvement upon a former patent issued to one McBurney in 1859, for a packing for the stuffing boxes of pistons; it was composed of piles of cloth or canvas cut bias, coated with rubber and pressed together and vulcanized. When thus made the packing was very solid—possessed but little elastic property, and there was some difficulty in maintaining a tight joint between it and the piston. To obviate this objection the patentee herein formed the packing with a backing of pure vulcanized rubber, or rubber of sufficient elasticity for the purpose desired, which might be covered and protected by a strip of canvas. The Court held this to be a patentable invention, although patents had been granted to Kierby by both the United States

and Great Britain, differing from the Gately Patent, that the wearing surface was not entirely on one side of the strip of rubber. The Court further gave its opinion in this case that the fact that there was a great demand for this packing, although costing more, was to be considered.

In the Barbed Wire Patent, 143 U. S., p. 275, this Court, Mr. Justice BROWN, delivering the opinion, held invention in the Glidden Patent, although there was but very little difference between that and the Kelly Patent of 1868, yet in his introduction of the coiled barb in combination with the twisted wire, by which it was clamped and held in position, he was held to have made a valuable contribution to the art of wire-fencing, the vital difference in the two patents being, as the Court held, in the shape of the barb itself. And again, in this case the Court held that the fact that the Glidden Patent was a far greater commercial success than the Kelly Patent found great favor in its eyes. The Court says: "It may be strange that, considering "the important results obtained by Kelly in his patent, "it did not occur to him to substitute a coiled wire in "place of the diamond-shaped prong, but evidently it did "not, and to the man to whom it did ought not to be "denied the quality of inventor;" and the Court cites approvingly the decision in the case of Loom Company vs. Higgins, 105 U. S., 580, where an improvement in looms for weaving pile fabrics, consisting of such a new combination of known devices as to give to a loom the capacity of weaving fifty yards of carpet a day where before it could only weave forty, was held to be patentable. And, where it had been urged that the combination was a mere aggregration of old and well-known devices, the Court said that "it was plain, from the evi-"dence, and from the very fact that it was not sooner "adopted and used, that it did not for years occur in "this light to even the most skillful persons. It may "have been under their very eyes, they may almost be

" said to have stumbled over it, but they certainly failed " to see it to estimate its value and to bring it into " notice. Now that it has succeeded it may seem very " plain to any one that he could have done it as well, " and also further held that the inventions of Hunt and " Smith were merely tentative and never having gone " into general use were to be disregarded."

In Gandy vs. Main Belting Co., 143 U. S., 587, this Court reverses the opinion of the Court below and sustains the patent on the ground of utility and says: " We do not think his improvement is a change in " degree, only, or such a one as would have occurred to " an ordinary mechanic, and our opinion is that it does " involve an exercise of the inventive faculty. The " change is such as would only have occurred to one " familiar not alone with the impossibility of making a " practical belt out of the ordinary canvass, but to one " who had bestowed considerable thought upon the " method of overcoming the difficulty. And we think " the fact that it has been largely adopted by manu- " facturers sufficient evidence of its utility."

And in Lehnbeuter vs. Holthaus, 105 U. S., 94, Mr. Justice Woods says:

" The patent is *prima facie* evidence both of novelty " and utility, and neither of these presumptions has " been rebutted by the evidence; on the contrary, they " are strengthened. No anticipation of the design is " shown, although the attempt has been made to prove " anticipation.

" The fact that it has been infringed by defendants " is sufficient to establish its utility—at least, as against " them."

In view of the character of the evidence of anticipation submitted by the defendant, and which we shall hereafter point out to the Court, we submit this Court will take the view as in the case last cited.

Now, why is not this a patentable discovery? The discoveries which have lain at the bottom of many of the most valuable improvements in processes have not been of any new law of nature, or of some occult property of matter, but merely of the practicability and utility of making some modification or omission in the steps of an old process, which everybody, if they thought about it at all, knew possibly *could* be done, but which no one ever *had* previously thought of, or, if they thought about it, perceived its utility or tried to do it.

The process of smelting iron, in a blast furnace, requires a blast of air to be blown in. If the air is cold, part of the heat of the fuel goes to heat it; if the air is already heated, then that expenditure of heat in the furnace is saved. Everybody at all acquainted with the art knew this; but nobody thought enough of it to try it until Neilson; and it turned out a great improvement, for which he justly obtained a patent.

Everyone knew that "middlings," viz., the part of the meal left after the superfine flour had been bolted out, was capable of a second bolting; but no one supposed there was enough saving in doing so to justify it, until Cochrane tried it, and then it proved a most valuable improvement in the art, and his patent for the process was sustained by this Court (94 U. S., 780).

Everybody acquainted with the ordinary processes of making oil cake knew that the seeds could be crushed by rollers alone as well as by rollers and muller stones, and that they could be steeped and pressed after having been crushed by the rollers alone just as well as after having been crushed by both rollers and stones; but in the general opinion of the manufacturers the muller stones were necessary, precisely as in this case in the general opinion of those engaged in lining oil barrels it was necessary to use dried glue. Muller stones always had been used, and dried glue had always been used, and no one cared to try experiments to see if the muller stones or the drying might not be profitably omitted.

A leakage of a single shipment of the Standard Oil Company cost $20,000 (Ans. to Int. 53, p. 133).

Those engaged in lining oil barrels could not afford to use an untried material. But Lawther discarded the muller stones, and saved just so much in the making of oil cake, and this Court held he was entitled to a patent. In like manner Leggett discarded the drying, and saved thousands of dollars a year to those who adopted his invention, besides giving them a better barrel. Is he not equally entitled to a patent?

Lawther vs. Hamilton, 124 U. S., 1.

It is no answer to this to say that Mr. Leggett himself, or other glue-makers, assume that glue generally is the same thing in any form; that glue and size are alike; that dried glue and liquid glue only differ in the amount of water, or that Prof. Chandler says that glue, when made by the cook in the kitchen when she makes soup, is the same thing as glue made by the glue manufacturer. In the first place these statements are inaccurate. Mr. Leggett himself is not a skilled chemist, and he and the other glue-makers, familiar as they are with glue, show that their ideas of the nature of the different solutions of glue are not always correct when not verified by experience; while, on the other hand, Prof. Chandler, speaking as a chemist merely, assumes that the term "glue" can be applied to any solution of which gelatine is an ingredient, from edible soup to glue for the market. In one sense this is true, but the great fact still remains that no one had, previously to Leggett, actually succeeded in lining barrels with glue soup, and until it was done no one knew that it would succeed. The Court in these cases looks to facts rather than theories. Where men have been doing a thing one way for years and another comes and does it another way and thereby effects a great saving; the fact that nobody took advantage of the new way before is pretty nearly conclusive evidence of invention. If there was no in-

vention in Leggett's process, why did not the Standard Oil Company adopt it years before? Nor is it any answer to the complainant's invention that he had not actually lined a barrel according to his process when he took out his patent. There is no requirement by law that the inventor shall do more than describe his invention in a manner sufficiently explicit for those skilled in the art to practice it. Leggett was familiar with the process of lining barrels, and experimented with glue soup to discover its properties—especially its adhesiveness and elasticity (Ints. 3, 5, p. 26; x-Ints. 711, 712, 713, pp. 78, 79; also Ints. 784, 785, p. 86).

He accurately describes his proposed process. The fact that he described it before he practiced it, if the description is correct, put his invention upon precisely the same footing as if he had practiced it before he described it. Whether the verification by experiment comes before or after the invention is immaterial. The invention is the idea, the experiment is the proof, and the invention is complete, so far as the Patent laws are concerned, when it is described so that it *can* be practiced, and not only when it has been actually practiced.

If Leggett was the first one accurately to describe and claim in a patent a practicable and successful process of lining barrels with glue soup, the argument in support of patent ability is just as strong whether he had or had not actually verified his invention by lining barrels before his specification was drawn.

Nor is it any argument against the utility of the invention that it has been used by very few except the Standard Oil Company; the reason is that practically the whole refining business of the country has been in the hands of that company. In short, on the whole case, the fact stands out conspicuously that Leggett *did* make a most valuable improvement, and the defendant has for years made use of it in contemptuous defiance of his rights, and after having treated him in a manner most discreditable to its officers. The Standard Oil

Company, when it raises the cry that this process was not new—that they knew it as well before Leggett told them as afterwards—when as matter of fact it was so new to them that they did not believe it could be done when it was first suggested to them; that it is of no value, and that there is nothing in the patent they have so persistently taken advantage of—raise a plea that falls harshly on the ear of a Court of Equity.

SECOND POINT.

As to Alleged Anticipation.

Reference has been made to three instances of prior use. We first call the attention of the Court to their first witness, Ransom H. Sargent, at the time of testifying a resident of Titusville, Pa., his business being "a "little of the oil business and a little of the newspaper "business" (x-Int. 1, p. 215). In 1861 he was engaged in Conneautville, Pa., in the oil-refining business; remained there until the winter of 1863–4, when the refinery, being proceeded against as a nuisance, he removed to Petroleum Centre. While at Conneautville in 1861, although admitting that he knew nothing about the manufacture of glue (x-Ints. 7, 8, p. 216), he went to a tannery near by and obtained scraps "consisting of dried pieces of hides, odds and ends of hides "and hoofs" (Int. 14, p. 212), put them into a kettle, boiled it until "we extracted the glue from them" (p. 212), and then lined his oil barrels with the glue he so obtained. "If one coating did not answer we put on a "second" (p. 212). When asked, x-Q. 7, "What "treatment did you subject them to before you put "them into the caldron or kettle?" he answered, "I "can't say positively what treatment, if any, we sub-

" jected them to; my judgment is that we didn't treat " them, but put them into the kettle." x-Q. 8: "Then you put them in with the hair on the " pieces of hide.?" A. "My recollection is that we " put them in just as we got them from the tannery in- " to this kettle." X-Q. 11. " What did you put into " the caldron or kettle with the scraps?" A. " For " common we used water, but we may have experi- " mented with a white substance, not lime, but " that is not clear to me." X-Q. 12. " Then you have " no recollection of putting in anything but water?" " A. " We experimented with something; can't think " of the name. We experimented once or twice with " plaster of Paris; we stirred in some plaster of Paris" " (x-Int. 12, p. 216).

The complainant presents to the Court in his record the testimony of five different glue manufacturers—Weisse, Weiderhold, Plumer, Upton, Milligan—who have been some of them fifty years in the business and rank among the largest. *All of them state the absolute impossibility of making glue in any such way as stated by the witness, Ransom H. Sargent.* Tanners' scraps always contain lime (Int. 9, p. 125; Int. 7, p. 160), and lime is the deadly enemy of glue; not one ounce of glue could be made from a thousand pounds of tanners' scraps unless the lime was first removed. All of those experienced glue manufacturers give in the early part of their testimony the proper and only way in which glue can be made. Even Professor Chandler, testifying for the defendant, gives a somewhat similar process (p. 272). Cooper, another witness, testifying for the defendant, says that glue cannot be made from hoofs. Milligan, an expert called by complainant, testifies (Int. 5, p. 169) that he took a pound of tanners' scraps, the very best that he could get, and, without previously treating them in any way and removing the lime in them, boiled them five hours. When asked if he obtained any glue, he replied "No." When asked

what was the resulting product, replied (Int. 10, p. 170), "*Sewage*," and that it was absolutely worthless (Int. 5, p. 169); the lime had entirely killed the glue. The bottle containing the product was put in evidence and marked "Milligan's First Experiment." He then put in evidence his "Second Experiment," which consisted of what he obtained from a pound of tanners' scraps which had been properly treated. It was a good glue (Ints. 13, 14, p. 170).

King Upton, the largest but two of all the glue manufacturers in the country—the house of Upton was established in the glue-manufacturing business in 1808—said that what the witness, Ransom H. Sargent, obtained from his "dried pieces of hides, odds and "ends of hides and hoofs," boiling them in the way he did, without treatment of any kind, was *worthless for any purpose whatever* (Int. 10, p. 160), and when shown Milligan's First Experiment said that the resulting product would be the same as that; viz., SEWAGE.

William Plumer, a witness already referred to, testifying for the complainant, a highly educated man and of large experience in the business of glue manufacture, having been employed by the defendant for some nine months at their refinery at Cleveland, Ohio, where he lined from four to six thousand barrels daily (Int. 11, p. 22), says (Int. 9, p. 125) that tanners' scraps always contain lime, that he had bought hundreds of tons and never saw any that did not contain it, and that if it was not removed the product resulting from the boiling would be worthless (Int. 10, p. 125); says glue cannot be made from hoofs or hair, and (Int. 14, p. 126) says that the plaster of Paris he put in, "even if it had been "good glue, would have absolutely destroyed its utility."

Charles Weiderhold, witness for complainant (Ints. 15, 16, 108), says that it would be impossible to make glue as Sargent says, and he has been thirty-seven years in the business of manufacturing glue. Frederick W. Weisse has been over fifty years in the busi-

ness, and he (Ints. 15, 16, 17, p. 91) says the same thing.

All of these five experts are practical glue manufacturers, capable of giving the very best testimony upon the subject, and all of them unite in saying how glue can be made (pp. 20, 89, 107, 159, 170). As opposed to all this array of testimony as to the impossibility of Sargent making glue in the manner stated, the defendant has introduced Dr. Chandler only, who merely says that, assuming Sargent's statements to be true, he made "glue" (Int. 29, p. 275). It is evident Dr. Chandler in this statement is merely insisting upon a use of the name "glue," which, as applied to the subject of which he is speaking, is misleading. He only means, as his subsequent examination shows, that, in his opinion, the solution formed by boiling tanners' scraps, from which the lime and impurities have not been removed, contains a compound which is chemically "glue"—that is, that the compound known to practical men as "sewage," contains "glue." Dr. Chandler speaks from a purely theoretical standpoint, and does not refer to any experiment with "sewage" in support of his statement.

But his theory is wholly unimportant. He gives no testimony to contradict the established fact that "sewage" is not "glue" in the sense in which the term is used by practical manufacturers, or that what Sargent made was what is known to manufacturers as "sewage," and was absolutely worthless for the purpose of lining barrels.

Is such testimony as this given by defendants' witness, Sargent, worthy of belief?

Let us glance for a moment at the character of this man and the position in which he stands in this case. He admits that he is employed by the defendant to "interview and look up testimony" (p. 255); admits

(p. 254) that he procured Warren W. Green to testify for the defendant (we shall later call the attention of the Court to the position in which the latter stands on the record); went from Titusville, Pa., to the home of Green in Richmond, Crawford County, and brought him to Erie, Pa.; remained with him until he testified, and was with him during the examination. William H. Abbott, also at Sargent's request, gave his extraordinary testimony for the defendant, and he was present during his examination; the same also in the case of Zadock Martin, another witness for the defendant. Sargent was also present nearly five months later in Erie, Pa., when complainant was taking the testimony of George W. Gray, and his presence there as well as that of Green is a matter of record (p. 186) as well as that Green participated in the examination by frequent suggestions to defendant's counsel.

Why this extreme interest in behalf of the defendant?

The answer is to be found in reply to x-Q. 1 as to whether he had not been "employed by the defendant "in making inquiries and performing services." Ans. "I expect to get paid for my time and services."

We submit that in view of the character of this man as it thus appears, and the overwhelming testimony as to the impossibility of his having lined oil barrels with glue as he has testified, that he is unworthy of belief when he pretends that he successfully lined barrels with a solution made from tanners' scraps, &c., in the manner he describes.

If the defendants can line barrels in that manner, they are free to do so without interference by the plaintiff.

Warren W. Green, a witness testifying in behalf of the defendant, says (p. 239) that during the years from 1861 to 1865 inclusive, he being then a cooper and

making barrels in the Town of Richmond, Crawford Co., Penn., obtained scraps and pieces of hide from a tannery close by, called the John Brown Tannery, brought them to his cooper shop, put them into a big cast-iron kettle, boiled it and made a glue with which he lined his barrels. In reply to x-Q. 44 (p. 242) says "it was "cattle's feet, hide and such stuff as we could gather "up where farmers had been butchering."

That he did not treat the stock in any way; says in answer to x-Q. 45: "What did you do with it, if any-"thing, before putting it into the kettle?" Ans. "We "did not do anything as I remember; we might have "washed the filth off," and in answer to the next x-Q. 46, "You put it into the kettle as you gathered it, did "you?" Ans. "I do not remember that anything "further was done with it than to put it into the kettle "and to fill the kettle up with water, and stir it up and "stew it up, and get the material into this liquid form."

x-Q. 47. "Have you ever had any experience in "manufacturing glue?"

Ans. "*No, sir; only this.*"

x-Q. 48. "You do not know anything about the proc-"esses of glue manufacture, do you?"

Ans. "No, sir; I never had any personal knowledge "of the glue business other than what I had in this "barrel business."

All the complainant's expert witnesses have testified (pp. 59, 89, 107, 159, 170) to the intricate and complicated process necessary in the manufacture of glue.

It requires a man skilled in the art to make glue of any kind, but as stated in the case of Sargent *supra* the resulting product of this boiling without previous treatment would be *sewage*, a worthless, offensive mass, as seen in Milligan's first experiment. Need we dwell any longer upon this?

Now, as to what witness Green says he did with his barrels after he had lined them. He took them in teams. "I had a good many teams of my own," and carted them to Erie, where he sold them to a firm of oil refiners named Kennedy & Gagan, who were situated (Int. 5, p. 239) "I do not remember the street; *it was* "*a street coming in from Waterford, above the Morton House,*" and when asked if they were satisfied with these barrels (Int. 87, p. 244). Ans. "Yes, sir; rather more "so than from any other factory in the city; we tried to "get first-class men and to do our work well."

Now, what are the facts in the case?

George W. Gray, a witness called in behalf of the complainant, testified (Int. 2, p. 178) that he had been a resident of the City of Erie, Pa., since 1847, and interested in oil refining since 1861; that he knew all the oil refiners in that city in the years 1861–5; that there never had been a firm there named Kennedy & Gagan, engaged in oil refining; that he had once been employed by the firm of D. Kennedy & Co., oil refiners, from 1862 for a period of about eighteen months; that their refinery was located on *State street, on the Waterford plank road, south of the Morton House,* and while with that firm he had had charge of the gluing of the oil barrels and that they *never bought a barrel which had been previously lined with glue either of Green or any one else;* that he never heard of any oil refiner buying any barrels so lined either at that time or any other time.

We call the attention of the Court to the fact that the refinery of D. Kennedy & Co. was situated just where Green says Kennedy & Gagan's was.

Clemens von Buseck, another witness testifying for the complainant (p. 187), said that he had been a resident of Erie, Pa., for fifty years, and for eleven years was engaged in the business of oil refining--1861 to

1872—and a member during that time of the firm of D. Kennedy & Co.; that their refinery was located *on State street, on the Waterford road, above the Morton House;* that he was every day attending to his business, which consisted among other things of looking after the gluing of the oil barrels, that he did not know Warren W. Green, and that his firm had never bought a barrel of said Green, lined or unlined, nor of any one else; that "*he would not have trusted such* "*barrels*" (Int. 10, p. 187); that he knew all the oil refiners in the City of Erie from 1861–5; that there was never such a firm there as Kennedy & Gagan; that at one time for a short period they had a man by the name of Gagan in their employ, but he had nothing to do with the lining of the oil barrels, as that was not in his department and that he knew nothing about it (Int. 14, p. 187). *Green was present during the examination, and was pointed out to the witness, and was asked if he had ever seen him before, and he said he never had* (Int. 11, p. 187).

John C. Von Buseck, another witness testifying for complainant (p. 191), a son of the previous witness, was in the employ of the firm of D. Kennedy & Co. from the spring of 1864. *He never in his life saw Warren W. Green, the latter being present and pointed out to the witness during the examination.* His business was also looking after the filling of the barrels, and gluing them after Gray left. The firm never bought a barrel of Green or any one else that had been previously lined; never heard of a firm named Kennedy & Gagan, oil refiners, in Erie, Pa., in 1864–5, or any other time (Int. 10, p. 191); that the refinery of D. Kennedy & Co. was situated on what was called the old *Waterford plank road on State street, above the Morton House.*

All three witnesses, the partner Clemens Von Buseck, his son John, and the employee Gray, all unite in saying that the firm of D. Kennedy & Co. never bought a

barrel that had been previously lined with glue; never had before seen this witness Green who has testified that he sold Kennedy & Gagan oil barrels so lined; that there never had been such a firm of oil refiners in Erie, and yet this same witness Green says (Int. 6, p. 239) that during all the years from 1861–5, inclusive, their refinery was located on the same spot as that of D. Kennedy & Co.

This same Green further says in his testimony (Int. 8, p. 239) that he obtained his scraps all those years, from 1861–5, with which he made his glue, from the John Brown tannery, the proprietor of which was Almon Clark, a nephew of John Brown. D. Lyman Clark, testifying for the complainant (pp. 194, 195), says he was the brother of Almon Clark, and that the said Almon Clark *left the Town of Richmond and the tannery in 1859–60, that he never came back there, and that the tannery was never run at all after that date, and no tanners scraps left in the tannery* (x-Int. 199, p. 205).

He also said that he knew Green very well (the said Green being present at the examination), that he had lived within a short distance of him while he had the cooper shop, and *never heard that he had any teams with which to cart his barrels to Erie, and never saw him with any* (p. 282).

This witness, Warren W. Green, testifying in behalf of the defendant, that he had glued barrels in the manner described and patented by the complainant thirteen years before the patent was issued; that he had carted the said barrels to Erie, Pa., and sold them to a firm of oil refiners in that city named Kennedy & Gagan, where no such firm of oil refiners ever existed; that the firm of D. Kennedy & Co., oil refiners, to which he clearly referred (their refinery being situated in 1861–5 just where he says Kennedy & Gagan was situated), bought barrels of him so lined; that he ob-

tained his scraps from the John Brown tannery, owned by Almon Clark, when the tannery was closed in 1859–60 and never reopened; that he carted his barrels so lined to Erie, when it is shown that he never had or owned any teams with which to cart them, cannot be honestly mistaken.

And this same witness, Green, admits that defendant's other witness, Ransom H. Sargent, brought him up from Richmond, Crawford County, to Erie, Pa., to give the testimony he has given. The testimony of both witnesses is utterly discredited.

There remains now to be considered in this connection the testimony of one other witness, which is quite as improbable as the other two.

William H. Abbott, testifying for the defendant (Int. 4, p. 247), says that in 1860, at Newton Falls, Ohio, he took three bushels of tanners' scraps, raw hide, put them into a kettle with water and boiled them, and with the resulting product he lined two hundred oil barrels; after he had lined them he wagoned them eighty-eight miles across the country to Titusville, Pa., where he filled them with hydro-carbon oil; he then carted them, so filled, twenty-two miles to Union Mills, and then shipped them by rail four hundred miles to New York; and that with this one lining they made thirteen continuous trips in the summer of 1860. When asked x-Q. 3, "What did you do with the scraps "before you put them in the kettle?" Ans. "Noth-"ing; simply put them in the kettle, put water on "them and boiled them."

As has been stated before, there is always lime in tanners' scraps (Int. 9, p. 125), as all the expert witnesses for complainant have testified, and lime is the death of glue—it cannot be made while any remains in the stock, it must be removed or the product is *sewage*. He says he did *nothing with the stock*. After lining the

barrels he carted them eighty-eight miles across the country in the month of May (p. 125).

Complainant's witness Plumer (Int. 27, pp. 128, 129) says, that if it had been the best lining that could have been made it would have utterly spoiled before it could have been carted that distance, and yet they made thirteen continuous trips all the way from Titusville, Pa., to New York. To x-Q. 26 (p. 249), "Did you "ever have any trouble with those barrels?" Ans. "Sometimes a chime would break, or the barrel would "require a new stave." x-Q. 27. "Did you have any "trouble with the linings?" Ans. "We did not; the "barrels went through without leaking."

Plumer says (Int. 30, p. 129) that if a new stave were to be put into a barrel which had been lined it would destroy the lining; and (Int. 28, p. 129), that the defendant invariably reline their barrels when they return.

Von Buseck, father and son, say the same thing (x-Int. 29, p. 188), "We always steamed them out." And yet this man Abbott, with the glue he made, lined oil barrels that could make thirteen continuous trips in hot summer weather to New York from an interior town in the State of Ohio, proceeding by wagon over one hundred miles, and by rail four hundred, to New York City, with staves broken, carrying the most penetrating of all substances, hydro-carbon oil, and had *not the slighest trouble from leakage.*

If he had taken the three bushels of tanners' scraps and *treated them in the most approved method*, as testified to by the various expert witnesses for the complainant, he could not have obtained more than from twenty to thirty pounds of glue (Int. 27, p. 92; Int. 36, p. 110; Int. 26, p. 128), and as it takes one pound of glue to line three barrels (Int. 220, p. 157) he could not

have lined more than ninety barrels at most; and he swears he had lined two hundred barrels.

And who is the man who so testifies? *An employee* of the defendant, keeping the books of one of their associate companies in Titusville, Pa. (Int. 1, p. 252). When asked, "Who first spoke to you about being a "witness in this case?" (x-Int. 6, p. 250), answered "Ransom H. Sargent."

Need any further comment be made upon the charter of such testimony?

Reference only will be made to that portion of the testimony of Zadock Martin, who was called to corroborate Abbott where he says, Q. 13, "Did you have any "trouble with those barrels on account of leakage?" Ans. "I don't know that I had; when they were re-"turned I would have my men drive down the hoops "on them. Sometimes they were gone two or three "weeks" (p. 253). Plumer, with his experience in lining six thousand barrels a day, while with the defendant in Cleveland, says (Int. 33, p. 130) that driving down the hoops upon a barrel that had been lined with glue would destroy the lining; "I don't think it pos-"sible to drive down the hoops without destroying the "lining."

Dr. Chandler's statement that what Abbott made was glue, was included in his statement that what Sargeant made was glue, and need be no further discussed. Dr. Chandler's evidence on this point does not, in the least degree, meet the overwhelming testimony offered on behalf of complainant.

After complainant had finished with his rebuttal testimony the defendant applied to the Court on the 18th day of May, 1888, for leave to prove another instance of prior use, which being granted, testimony was offered to show that at some time, without knowledge or memory of the date, a cooper by the name of Beau-

mann, at work in Peter Cooper's glue factory, assisted by his son, the witness, took some liquid glue; he does not remember how much; put it into a barrel, rolled it around, and then, when he thought enough had adhered to the sides, allowed the remainder to run out; then put the barrel aside and let it remain *four days*, when he filled it with neat's-foot oil and sent it away. He does not know when this was done, only that he helped his father and that he died in 1874. Neither is there any testimony to show what was the consistency of the glue so used or whether it was fit for the purpose, or whether it accomplished the purpose. He says it was done only where the oil was to be sent away a long distance and the barrels were never returned, and that no knowledge was had as to whether the lining was satisfactory or not.

He says also that the barrels remained after they were so lined *four days* before they were filled with oil. Plumer says (Int. 24, p. 128), when asked what would have been the result if barrels, after they were lined, were allowed to remain a day or two before they were filled. Ans. "I don't know as in a single day or two "the coating would have decomposed, but the question "of decomposition would depend somewhat on the season " of the year and the temperature. As a rule, I should "say they could be safely kept *a day or two*, if the lining " was good glue." And yet the witness says they kept them *four days* before they were filled.

The Judge at Circuit says that knowledge of soup glue came also to Beumann before the date of Leggett's invention, when he was called upon to line neat's-foot oil barrels in Peter Cooper's glue factory. Now, what were the facts? The witness Beumann was engaged "in all jobs and trades in the factory" (Ans. to Int. 2, p. 325), sometimes, as a boy, working at the nets, and again a cooper—an ignorant, inexperienced man, with no knowledge at all concerning the manufacture of glue, and having nothing to do with its manufacture. Now, after he had lined these barrels with this liquid

glue, he says, in answer to Int. 7, page 325, he took them away some two hundred feet, and let *them stand for three or four days.*

Now, that circumstance alone shows the utter uselessness of what he did, even if he did it at all. That intelligent glue manufacturer, Plumer, says, in answer to Int. 18, page 126: "In warm weather, glue allowed "to remain in the barrel, even with the bung out, would "decompose nine times out of ten before it would dry, "and *would be absolutely unfit for any purpose;* the "spores of fermentation, having once started, would ex- "tend all over the whole surface of the coating;" and in answer to Int. 155, page 147: "Every glue maker "must know, and does know, that liquid glue will rapidly "decompose unless preserved by some antiseptic." "Successful glue-making requires science and practical "knowledge, and an ignoramus can never make glue" (Ans. to x-Int. 134, p. 144).

And yet Beaumann says: "We let them stand for "three or four days, until they saw fit to take them away "out of the place."

And they took them away, and, at the end of that time, filled them with neat's-foot oil and sent them to California, and never heard of them again, and did not know whether it answered the purpose or not. Neat's-foot oil does not require—save, perhaps, during some of the hottest months—any lining, or glue, to be held in a barrel. It is not like petroleum or hydro-carbon oil. If it had required any lining, the one given to them by Beaumann, as stated by Plumer, was utterly worthless, and, for aught heard to the contrary, was worthless.

Shall testimony like this—given by an ignorant, inexperienced man, a cooper, whose father also was a cooper, as to something he thinks he did, and concerning which he spoke to no one—be allowed to discredit an invention which Leggett gave to the world, and one which has proved so valuable? Why, if this was done, as this witness thinks, was not this discovery

made public, and why did not the experienced glue manufacturers, in a well-known place like Peter Cooper's glue manufactory, adopt, make use of, and proclaim the discovery to the world? And yet, not one word do we hear from them on the subject.

We submit that this testimony is too vague, indefinite and uncertain upon which to found a claim for prior use to invalidate a patent.

Nor does the evidence of the other witnesses relative to the matter prove anything further. One of the witnesses, Williams, says (Int. 18, p. 332), that this manner of lining oil barrels was not done in all cases of oil shipped to a distance, nor does the evidence given that neat's-foot oil was shipped to California in certain years prove that the barrels were lined with liquid glue at all, or, if so lined, were by means of liquid glue in the same state or consistency as described in complainant's Letters Patent.

The defendant put on as a witness one Henry D. Cone, a paper manufacturer in Massachusetts, who says he made sizing for the purpose of sizing paper so as to make it impervious to water or ink. What has all this to do with the case in point, whether liquid glue boiled to a certain consistency would make a better lining for oil barrels than dried glue remelted?

Plumer, speaking of these poor glues known as sizing, calls them "gum," and not glue (Ans. to x-Int. 116, p. 142), and says in answer to x-Int. 128, page 143, "that they would be absolutely unfit for the lining "of oil barrels." And in answer to Int. 219, page 157, says: "I do not consider size as commercial "glue, for it cannot be dried on nets, there not being "sufficient density of glue in the solution." (x-Int. 165, p. 149), says again: "Sizing, as it is commonly under-"stood, is a thin solution of gelatine which would not "be of sufficient density to be dried upon nets, and is

" most generally used by paper-makers." This was not simply liquid glue, this sizing, because this witness Cone says " alum " was added (Ans. to Int. 11, p. 257) : " We almost invariably have added alum after the siz- " ing has been drawn into the tubs." And he quite as often bought the dry glue, remelted it, and added alum. He also swears (Ans. to x-Int. 52, p. 260), that he had had no other experience in glue manufacture than what he had gained by making size.

Introduction of testimony like this of Mr. Cone's is no more an anticipation of this patent than that of Prof. Chandler's, when he says that when the cook in the kitchen boils a piece of meat she makes soup glue.

The same criticism made in the above case of Cone's applies with equal force to the testimony of Adrian Queru, a witness for the defendant. He made sizing which he sold to picture frame-makers, wall-paper makers, but will not swear he ever sold any to oil refiners (Ans. to Int. 16, p. 234), and it was only for a short time he manufactured this liquid glue, for he afterwards went to Marlborough, N. Y., and there only made hard glue. He made no discovery as to the virtues of glue in a liquid form for the purpose of lining oil barrels, and what he did can be in no sense an anticipation.

" Justice and equity require that no evidence of " prior knowledge or use should defeat the right of an " inventor to his patent short of that which should show " that the public had in some way become possessed of " that which he was bound to give as the consideration " for his grant." As has been well said: " If a patent " once granted is defeated by any evidence short of this " then the public obtains without consideration and un- " der promise of reward, that knowledge which enables " it to practice the invention."

We are therefore met in this case with the fact that if Sargant, Green and Abbott, in 1860–65, did invent the process claimed and given to complainant in 1874, or if the cooper, Beaumann, did on some unknown date line barrels with liquid glue, the public received nothing from their hands.

The Courts have held in many cases that no patent for an invention can be overthrown by mere recollections; and the authorities are uniform that the "probative effect of conduct will outweigh a host of "witnesses;" "where the prize is great, alleged recol- "lections are treacherous and cannot generally be con- "tradicted when untrue."

Evidence attacking the validity of complainant's patent, on the ground of prior use, must be *probable, free from doubt, decisive and unimpeachable.*

> In the case of Gottfried *et al.* vs. The Philip Best Brewing Co. *et al.*, 17 Off. Gaz., 675 (Dec., 1879); U. S. C. C., E. D. of Wis., DYER, J.,

Where it was alleged that the complainant's letters patent had been anticipated by six different persons, and proofs offered to sustain said allegations:

"The Court should be well satisfied by clear and "credible testimony that the alleged earlier invention "actually existed, that it was a perfected device, capa- "ble of practical use, and was not of such a character "as to entitle it only to be regarded as an imperfected "and abandoned experiment. It is so easy, after a new "and useful invention has come into existence and "brought into public use, for persons to come forward "with claims that they invented the same thing many "years before, and should therefore be esteemed the "real and original inventors, that the Court should re- "quire *convincing* proof of the merits ef such claims be- "fore overthrowing the patent ,especially so when it "appears that the alleged earlier inventor has not ap-

"parently regarded his supposed invention of sufficient "importance to push it upon public notice or to apply "for a patent which would protect him in its exclusive "use."

In the case of Duffy vs. Reynolds, 33 Off. Gaz., 621 (Aug., 1885); U. S. C. C., Dist. of New Jersey, NIXON, J.:

"The burden of proving such a defense is upon the "defendants. *Any doubt respecting the evidence is fatal.*"

In Perham vs. American Button Hole Co. 4 Fish., 468, STRONG & MCKENNAN, JJ.:

"The evidence must establish clearly the priority of "a completed and useful machine. To *doubt upon this* "*point is to resolve it in the negative.*"

Patterson vs. Duffy, 20 Fed. Rep., 641.
Howes vs. Antisdale, 8 Off. Gaz., 685.
Crouch vs. Speer, 6 Off. Gaz., 187.
Campbell vs. James, 17 Blatch., 42.

In Hitchcock vs. Tremaine *et al.*, 9 Blatch., 552, BLATCHFORD, J., said:

"Its success leads infringers and rival inventors to "set up crude and unsuccessful experiments as antici- "pating it, and *dim recollections are stimulated and con-* "*science is strained to clothe with living flesh what was an* "*inert and useless skeleton.*"

Aultman vs. Halley, 11 Blatch., 333, WOODRUFF, J.:

"*I place no confidence in the testimony* of the principal "witness as to each machine tending to show the nature, "character, and even limited success of those inven- "tions."

In Taylor vs. Wood 12 Blatch., 121, BLATCHFORD, J.:

"The burden of proof is on the defendant to show "his priority. His evidence is too vague and unsatis- "factory to establish affirmatively, as against the plain-

"tiff's patents, that the plaintiff was later in time of "invention."

Parker vs. Stiles, 1 Fish., 337.
Herring vs. Nelson, 3 Bann. & Ard., 56.
McMillan vs. Barclay, 5 Fish., 205.
Union Sugar Refinery Co. vs. Matthieson, 3 Cliff., 654.

Mr. Justice STRONG, in Roberts vs. Dickey, 4 Fish., 542 :

"The defendant must, to set aside the invention "claimed by the patentee on the ground that it is not "new, establish his allegation *by satisfactory and pre-* "*ponderating evidence.*"

Vulcanite Paving Co. vs. Am. Art. Stone Co., Pat. Off. Gazette of Febry. 21, 1888.
Hayden vs. Suffolk Mfg. Co., 4 Fish., 90.

In American Bell Telephone Co. vs. Peoples' Telephone Co., S. D. of N. Y., WALLACE, J., said :

"Evidence of doubtful probative force will not over- "throw the presumption of novelty and originality aris- "ing from the grant of letters patent for an invention."

U. S. Stamping Co. vs. Jewett, 18 Blatch., 469.

THIRD POINT.

Even assuming that Beaumann, who must have been, from the nature of his occupation, wholly ignorant of all the processes of glue manufacture, might have used some kind of liquid glue for lining neat's-foot oil barrels, or that Sargent, Green and Abbott, who are also sworn to have been likewise ignorant, might in some way have lined some oil barrels, yet they must have been of a crude, defective and experimental character.

The Courts have uniformly held that experiments equivocal in their results and then abandoned will not be permitted to prevail against an original inventor who has perfected his improvement and obtained his patent.

Even assuming that Beaumann used liquid glue of the proper consistency and as described in complainant's letters patent, yet what he did had been forgotten and was only recalled to the memory of his son and the other witness who saw him use it when they were told of complainant's process.

So far as the public was concerned, it was a lost art, and comes within the rule as laid down by this Court in the case of

Gaylor vs. Wilder, 10 How., 477.

FOURTH POINT.

To invalidate complainant's letters patent there must have been prior *invention*. Even assuming that Sargent, Green, Abbott and Baumann did something of which they claim, yet they invented nothing. The proof, as already shown, is wholly insufficient to establish the allegation that the result subsequently obtained by the patented invention was obtained by these persons, but even if it had been obtained, it was accidental and led to no discovery.

Parkhurst vs. Kinsman, 1 Blatch., 494.

NELSON J.:

"It is not enough to defeat a patent already issued "that another conceived the idea or possibility of effect-"ing what the patentee accomplished."

Tilghman vs. Proctor, 102 U. S., 711.

"If the acids were accidentally and unwittingly pro-

"duced while the operators were in pursuit of other and "different results, without exciting attention and with- "out its being known what was done or how it had been "done, it would be absurd to say that this would be an "anticipation of Tilghman's discovery."

"A single fortuitous success is by no means inven- "tion within the meaning of the patent law. He not "only did not and could not give it to the public, for he "did not possess it himself."

Matthews vs. Skates 1 Fish., 602.
Curtis on Patents, 43, 48.
Putnan vs. Hallender, 19 Blatch, 62.
Merwin on Patentability of Inventions, pp. 647, 648.

FIFTH POINT.

Complainant is not guilty of laches.

In September, 1873, a few weeks before the insurance of his patent, complainant disclosed to the officers of the defendant his discovery (p. 30). During that and the following month he had, at their request, several interviews with them in which they told him they were considering it. In October the firm with which he was connected failed (p. 32), and he entered the employment of defendant while they were so considering. Returning to Cleveland in January, 1874, they informed him they had no further use for his services (p. 32). During this interval William Plumer had written them his letter of November 19th, 1873, offering to make liquid glue (p. 316), and they had written him to come to Cleveland, Ohio, in the early part of January, which he did, and they soon after entered into a contract with him to make liquid glue for $3,000 *per annum* (Int. 52,

p. 133). Clearly it was not convenient to have complainant in their employ at such a time. But in January he remained in the city and endeavored to conclude some arrangement with them by which they would adopt his process. At the first interview in January with the defendant's treasurer, Colonel O. H. Payne, he asked a week's time, at the end of which he told complaint that "they had concluded not to go into the glue "business" (Int. 68, p. 32). Complainant told him (having heard rumors that they were about adopting his process) that they had promised and agreed not to adopt his process without his consent, and that if they did he should sue them (Int. 68, p. 32). "He told me that "*he did not care how much I sued, that they paid their* "*lawyers by the year*" (Ans. to Int. 68, p. 32).

This he said in a sneering way (Int. 131, p. 81). Still complainant endeavored to come to some terms, and wrote three letters to defendant (Exs. A & B, p. 87). To one, intimating that they were about making terms elsewhere and asking for information, came the reply from Colonel O. H. Payne "that they had no informa- "tion to give" (p. 88). But an arrangement had already been made by them with Plumer, by which he was to receive a very small sum per annum for doing the same thing. This arrangement had been made by Henry M. Flagler, one of the officers of the defendant to whom complainant had disclosed his process. He had written to him to come to Cleveland, and when he came spoke to him about Leggett's patent (Int. 13, p. 23; Int. 40, p. 131; Int. 47, p. 132).

And thus they obtained for a small sum per annum that process of complainant which has helped make them rich. The officers of the defendant refused to give complainant any information whatever and defied him.

In 1875 he saw Flagler and asked redress, "but he "didn't pay much attention to it, and said if I "had any grievance to go to the company about it" (x-Int. 39, p. 7). Go to a company which had already

discharged him from its employment, stolen his process and had informed him when he had previously sought redress that "they employed their lawyers by the "year?"

In the meantime, he had arranged with a firm of oil refiners in Pittsburgh (x-Int. 56, p. 38) to adopt his process, which they did, with great pecuniary advantage to themselves, but when they heard that the defendant refused to pay they also refused. The complainant was a poor man (page 70), only just married and with an income of but $1,500 per annum which (with two exceptions of $2,000) was all he had ever received up to the time of commencing this suit; he has been in no financial condition to bring suit against this powerful corporation.

In 1880 he consulted a solicitor in Pittsburgh with reference to commencing such a suit, and was informed that he had a good case (x-Int. 8, p. 36), but he could not afford on his limited income to bring the action.

The complainant, being powerless, by reason of his poverty, to prevent the defendant from using his patent, is not estopped now from asserting his right, when he is in a condition to enforce it.

In McMillan vs. Barclay (5 Fish., 201), W. D. of Penn., McKennan, J., says:

"If they appropriated it without consulting him, and "he was passive when he knew it, because he was "powerless to prevent them, he is not estopped from "asserting his right when he is in a condition to "enforce it. If they took the risk of using what they "did not own, the owner's helplessness then will not "shield them from accountability to him now. Who-"ever reaps where he did not sow, and wrongfully "appropriates what belongs to another, equity will "not stay the hand of the rightful owner against him."

SIXTH POINT.

As to the question of reissue: There is no difference between the first and second patent, except that in the first there was no claim made on the barrel. It was omitted by inadvertence (Int. 141, 142, p. 82); within a few weeks after the first issue, seeing that a mistake had been made by his lawyers, he made his application for his present patent, which was immediately granted.

The reissue was properly granted. The description of the process contained in the original specification necessarily included a description of the glue-lined barrel produced by the process. The reissue merely added a claim for the barrel itself, which may and should be included in the patent for the process, where, as in this case, novelty in the process produces novelty in the result. The application for the reissue was filed only ninety-three days after the date of the original patent. Allowing the ordinary time for the transmission of the patent after its date, the examination by the patentee, the preparation of reissue application after it has been placed in the hands of the solicitor, and for ordinary and not unreasonable delays, in these successive steps, the patentee is not *prima facie* chargeable with laches in correcting the error in the original patent. The lapse of time between the date of the original and of the reissue application is not so great as, of itself, to constitute presumptive evidence of laches, and throw the burden upon the patentee to explain the delay. The presumption in favor of the regularity of the Commissioner's action is sufficient to cover the case. He did not, on the face of the proceedings, exceed his jurisdiction. There is no positive evidence of laches, and no proof of the intervening rights of other inventors or of innocent users or by the public generally. The reissue is valid within the rule established by the authorities: where "the product uni-

" formly follows the employment of the process, the in-
" ventions are inseparably connected with each other,
" and the product may be covered by a reissue."

2 Rob on Pat., §§ 674, p. 364.
Goodyear vs. Providence Rubber Co., 2 Cliff., 351, 371.
Tucker vs. Dana, 7 Fed. Rep., 213.
Anilin vs. Hamilton Co., 3 Bann. & A., 235.
Topliff vs. Topliff, U. S., .
Wollensak vs. Reiher, 115 U. S., 96, 99.
Maher vs. Harwood, 112 U. S., 354, 362.
Ives vs. Sargent, 119 U. S., 652, 661, 662.

There being no change in the reissue as respects the process claim, it is valid to that extent under any circumstances.

Gage vs. Herring, 107 U. S., 640, 646.

SEVENTH POINT.

The patent in suit is not void for an insufficient or deceptive specification.

It was argued, in behalf of the defendant in the Court below, that the patent was invalid on this account, because of the statement in the specification to the effect that the glue soup was to be applied to the inside of the barrels when it had reached a consistency " considerably less than that which is required " wherein semi-fluid, solid or cake glue is to be produced." This statement is said to be false, because Leggett stated some manufacturers reduced their jelly glue to about five parts of water to one of glue, and that the soup for lining barrels contained, on an average, five parts of water to one of glue; and Mr. Plumer stated that the glue soup with which the defendant

practised Leggett's process contained about four to six parts of water to one of glue. As the defendant assumes, without proof, that two mixtures which have, roughly speaking, the same proportions of water and glue must have the same consistency it is argued, that the consistency which Leggett's glue soup must have reached, in order to practice his process efficiently, must be not less than, but the same as the consistency employed when dried glue is to be made.

This is a wrong conclusion.

First. The testimony does not show that the consistency of the fluid depends solely upon the relative amount of glue and water which it may contain, independent of all other conditions.

Second. The testimony does show positively and without contradiction that, in practising Leggett's process, the defendant, as a matter of fact, followed the course described in the patent and applied the glue at a thinner consistency than would have been employed if the intention had been to produce jellied or dried glue.

Says Mr. Plumer:

"We had the liquid glue thinner than we would if "making dried glue." Rec., p. 21, Int. 5.

And further:

"You have spoken about the consistency of the "liquid glue. Was the consistency of the liquid glue "when poured into the barrels greater or less than you "would have made it had you continued the manufac-"ture into solid glue?

"A. As I have already stated it was less." Rec., pp. 21, 22.

And further:

"Such stock as we used at Cleveland we would have "to boil it from one to two or three hours longer to "make commercial glue—that is to give it the right "consistency for sale." Rec., p. 22.

Mr. Plumer nowhere retracts or qualifies these state-

ments. When, upon his subsequent examination, he refers to the fact that there was substantially the same amount of water in the liquid glue with which he lined the defendant's barrels as there would have been if he had been going to make it into dried glue, he, manifestly, only meant to say that the amount of water in it when he stopped the process was the same as it would have been if he had pursued the process to the end for the purpose of making dried glue; he did not mean to say that it would have made good dried glue if he had stopped the boiling at the point at which he actually stopped it in order to put the fluid into the barrels.

Rec., p. 154.

It also appears that the proportionate amount of water and glue present in the solution when dried glue is to be made depends upon the stock and the season of the year, the temperature and other circumstances, so that that proportion is a varying one, and no particular ratio between the glue and water can be taken as the proper one under all conditions.

Rec., pp. 67, 138, 139, 154.

It follows that the direction that the glue soup is to be allowed to attain a consistency considerably less than when dried glue is to be made, is the proper direction for the practicing of the process. Whether, at that consistency, the liquid is composed of relatively more or less water or glue, will vary with different conditions; but it is the consistency, and not the proportion of constituents, which is to form the test. There is no evidence that this direction is not intelligible to one skilled in the art, or not sufficiently full and exact to enable such a person to practice the the process.

There is no evidence that if the direction is followed the desired result will not be attained, but the contrary. The defendant lined its barrels with the liquid glue, brought to a consistency much less than it would have

had if it had been intended to make dried glue; and the barrels so lined were serviceable, and had the advantage which the invention was intended to secure, viz: a better lining at a smaller cost.

For all these reasons, it appears that the point that the specification is misleading or insufficient is not well taken.

EIGHTH POINT.

Infringement.

If the foregoing argument in answer to the charge that the specification is insufficient is correct, there is no question as to infringement.

Whatever the relative proportions of glue and water in the solution with which the defendant's barrels were lined, it is clearly proved that its consistency was in accordance with the description in the patent, and less than if it had been intended to make dried glue. Nor, in such a case as this, was it necessary to call a witness and ask him whether the process carried on at defendant's works under the direction of Mr. Plumer was not the process of the patent, because it is so clearly and necessarily the same that such a question would be wholly superfluous. Upon the question of similarity, where two processes are evidently identical, expert evidence as to that similarity is not required. It will not be seriously denied that, if the patent is valid, it has been infringed.

NINTH POINT.

The defendant should not be heard to dispute the novelty of the patent in suit in answer to a suit for infringement.

About the middle of September, 1873, Leggett proposed to the defendant, through its managing officers, to employ his process, which he kept as a secret. They agreed that if he would disclose his process, which he asserted would make a great saving, they would not use it without his consent. He, thereupon, disclosed it, and pointed out its advantages. They did not assert that it was old or that they knew it before, but they expressed incredulity as to its success. They stated that they did not believe it would work. But they proceeded to take measures to adopt it, and, about the first of the following January, employed Mr. Plumer to line their barrels by Leggett's process.

In the meantime, on the 21st of October, 1873, Leggett's Patent had been issued, of which fact one or more of said officers was aware.

They, thereafter, proceeded to use the process, and thereby obtained a superior lining for their barrels, and made a very great saving in the cost of manufacture.

These facts are, practically, admitted for the testimony of Mr. Payne and Mr. Rockefeller is simply to the effect that they have no recollection whatever on the subject; and Mr. Flagler, who was one of the parties to the agreement and a principal actor in the transactions referred to was not called at all.

The testimony relating to the said transactions will be found at pp. 29, 30, *et seq.*, 87, 88, 131, 132, 302, 304.

The disclosure by Mr. Leggett to the defendant's officers of a process which was then a secret, which had never before been practiced, and which they did not

know, and the imparting of which placed them in a position where they could immediately avail themselves of it, and thereby save to the defendant several thousand dollars a week, was a valuable consideration for their agreement not to use the process without Leggett's consent.

Having made this agreement, Leggett's obtaining a patent some weeks after the disclosure did not alter or destroy said consideration or affect said agreement.

The patent only gave Leggett a title, by letters patent, to what he had before claimed to hold by an unpatented title; and the defendant's agreement not to use the process without his consent was, in effect, an agreement to respect that title, whether patented or unpatented, and equivalent to an agreement not to infringe a patent for said process, should any be issued.

There is no evidence offered to show that Leggett's process was not new to the defendants when disclosed to them; nor did they put forward any such claim at the time of the disclosure or since. There is no doubt that they promptly proceeded to adopt the process to their enormous advantage.

Under such circumstances, whether their contract not to use the process without Leggett's consent was, or was not enforceable under the Statute of Frauds, or even if the Statute of Limitations had run against it at the time this suit was begun (which is not, however, proved), the defendants should not be heard to set up the defense of want of novelty in a suit for infringement of the patent.

Having agreed *not* to use the process without the proprietor's consent, they ought not to be permitted, in equity and good conscience, in a suit brought to enforce that owner's title, founded upon his patent, to set up that they *may* use it without his consent. They practically agreed, for a valuable consideration, to treat it as novel and not to dispute Leggett's right to it.

Their contemptuous disregard of a right which they admitted, and their repudiation of a promise upon which the plaintiff acted in good faith, amounted to a fraud, of which they should not be allowed to take advantage.

Loring vs. Booth, 52 Fed. Rep., 150.
Time Tel. Co. vs. Himmer, 19 Fed. Rep., 322.
Magic Ruffle Co. vs. Elm City Co., 13 Blatch, 151, 155–158.

Appellant submits, upon the foregoing facts and arguments, that the decree should be reversed and the cause remanded with directions to enter a decree for the complainant.

SAMUEL C. REED,
Complainant's Counsel.

EDMUND WETMORE,
Of Counsel.

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Supreme Court of the United States.

OCTOBER TERM, 1892—TERM No. 225.

EDWARD W. LEGGETT,
Appellant,

vs.

STANDARD OIL COMPANY OF OHIO,
Appellee.

BRIEF FOR APPELLEE.

CHARLES C. BEAMAN,
JOSEPH H. CHOATE,
Of Counsel.

Supreme Court of the United States.

Term No. 225.

EDWARD W. LEGGETT,
Appellant,

vs.

THE STANDARD OIL COMPANY OF OHIO,
Appellee.

STATEMENT.

This is an appeal from a final decree of the Circuit Court of the United States for the Southern District of New York, which decree was filed on the 20th day of May, 1889 (see p. 246), dismissing with costs the bill of complaint, which was founded on certain Letters Patent granted to the appellant. The cause came on for final hearing before the Honorable Nathaniel Shipman, Judge, who, on May 15, 1889, filed his opinion (see pp. 341–345) dismissing said bill for want of patentable invention (38 Fed. Rep., 842).

The appellant (complainant) is a citizen of New York. The defendant is a corporation organized and existing under the laws of the State of Ohio.

The original bill of complaint was filed April 8, 1887 (p. 1). The original answer was filed September 5, 1887 (p. 5). The original bill of complaint alleged the ownership of Letters Patent by the complainant, infringement by the defendant, and prayed for an injunction and accounting. The Letters Patent sued on are certain reissued Letters Patent granted to the complainant on the 10th day of March, 1874 (p. 209), the original of which were granted on the 21st of October, 1873 (p. 322). The complainant's *prima facie* proofs were taken before the answer was filed, and consisted simply of the testimony of William Plumer (p. 19).

Defendants in their answer had, among other defenses, alleged prior use of the complainant's invention by Ransom H. Sargent and others, and they began taking the testimony of Sargent and others on November 2, 1887, in Western Pennsylvania. *After the defendant had taken the testimony of such witnesses to prove prior use* (pp. 211–255), the complainant in January, 1888, made a motion to amend his complaint by alleging to the effect that the complainant had, before the issue of the Letters Patent to him on October 21, 1873, disclosed to the officers of the defendant his alleged secret, and that the defendant had promised not to use the same without the consent of the complainant and had, nevertheless, thereafter done so, and was therefore "estopped " from denying or in any way questioning or attack- " ing the validity " of the Letters Patent (p. 14). Defendant opposed this motion to so amend the complaint, but the amendment was allowed by an order dated January 12, 1888 (p. 11). Thereafter, on February 6, 1888, defendant made a supplemental answer to the said amendment of the complaint (p. 16). The replication to this supplemental answer was filed on February 12, 1888 (p. 18). Thereafter the testimony of the complainant was taken in support of the allegation of the amendment of the

complaint (pp. 26 and 88). Thereafter the defendant took further testimony showing prior use of the alleged invention and the state of the art, and also in support of the supplemental answer (pp. 256–326). Thereafter complainant took proof in rebuttal (pp. 89–208). Thereafter defendant made a motion to amend the answer and take further testimony as to prior use. This motion was granted on May 21, 1888 (p. 324), and thereafter defendant took testimony in support of such amendment to the answer (pp. 325–341).

THE APPELLANT'S OWN STORY (pp. 26–88).

Edward W. Leggett was in the summer of 1873 a traveling salesman for his uncles, F. W. & G. F. Leggett, of the City of New York, dealers in glue, but not manufacturers. Leggett was at this time about thirty years old. He had never made any glue except that as he traveled he had with him a small ordinary glue-pot, holding about a pint, and in this glue pot he dissolved dried glue, and in this glue-pot he also made glue from so-called prepared glue-stock. After dissolving such dried glue and after making such glue, he glued pieces of wood together for the purpose of determining the quality of the different glues, and as a result of these experiments he came to the conclusion that pieces of wood could be fastened together as well or better with glue that had never been dried as with glue that had once been dried (pp. 27, 57 and 58). He had in the course of his business visited the works of the Standard Oil Company at Cleveland, Ohio. He had found that company at their works lining the inside of oil barrels with glue by a process substantially as follows (p. 40, x-Q. 78): The ordinary dried glue of commerce was taken and dissolved in the ordinary way so that a liquid glue was made of the proper consistency and temper-

ature. A quantity of this liquid glue was then, while hot, poured into an oil barrel through the bunghole, and the bung was then driven in and the barrel was rolled around so that the inside of the barrel was coated with the hot glue. If there were any leaks in the barrel, the steam or hot air would escape through such leaks, and thus the leaks would be discovered. After the barrel had been well shaken so that the glue had covered the inside, the bung was taken out and the surplus glue allowed to run out of the bunghole. After the glue was sufficiently dried in the barrels, the barrels were filled with oil, the coating made by the glue serving the purpose of preventing the leaking of the barrels and making them oil tight. This process of gluing was old and well known before Leggett saw it in use at the defendant's works. Leggett testifies that having seen this process at the defendant's factory and other refineries, and having found, by his experiments, that pieces of wood could be made to stick together just as well if not better, with glue that had never been dried than with glue that had been dried, he, in August, 1873, met Mr. John D. Rockefeller, the President of the defendant Company, and talked with him in a general way about his (Leggett's) new process or "secret" that would make a great saving; that afterwards, early in September, 1873, he called at the office of the defendant company at Cleveland, Ohio, and saw Mr, Rockefeller, the President, Mr. Flagler, the Secretary, and Col. Payne, the Treasurer of the defendant, and told them that if they would give him their word of honor that they would not use his (Leggett's) process in any manner, shape or form without his consent he would impart the process to them, and that then Mr. Rockefeller so promised him, and thereupon he disclosed to them his process as follows: "I told them that I proposed "to manufacture glue by any of the usual processes "of manufacturing glue; that I proposed to buy the

"stock in its raw state and treat it as any glue manu-
"facturer would; that I proposed to take that stock
"after treatment and put it in the boilers, and boil
"it down to the proper consistency for the barrels,
"and dispense entirely with all the drying rooms
"a glue factory would have to have, thus making a
"great saving on the drying of the glue—run no
"risks in spoiling by weather, and I deemed it
"better" (p. 30).

He testifies that at the times of this conversation he had not applied for a patent, and he talked of it as a "secret," not as an invention (p. 53), but that after this conversation he made up his mind that he had made a fool of himself in imparting his "secret' and knowledge without having it in black and white. He testifies (p. 48) that there was no written promise of any kind between the defendant and himself. He then went to Washington to apply for his patent and employed Leggett & Leggett, patent solicitors there, who were distant relatives of his, and sons of M. D. Leggett, then Commissioner of Patents (p. 45).

The contents of the file wrapper of his original application are printed (p. 306). From this it appears that his application was sworn to in Washington on September 16, 1873, and that it was filed September 29, 1873; that it was examined on October 1, 1873, by Mr. Hedrick, and ordered to issue on the following day, October 2, 1873, and that the patent was dated October 21, 1873. This original Letters Patent is printed (p. 322). In it Leggett claims to have invented an improved process of coating or lining the inside of barrels for the purpose of rendering them impervious "to water, oil or any contained substance."

And he therein further says (see p. 322): "I am
"aware that barrels, &c., have been lined or coated
"with glue, when said glue has been subjected to a
"process of reduction by dilution from its original

" consistency to a sufficiently liquid state; but I am " not aware of any process wherein the glutinous ma- " terial has been permitted to attain only its proper " consistency and then applied directly, thus saving " the time, labor and expense heretofore employed by " continuing the manufacture of the glutinous soup, " until it has attained a semi-fluid or gelatinous con- " sistency, thus necessitating a reduction by dilution " and reheating before it is fit for application, as set " forth in this specification, traveling over as it " were, the same ground backward and forward two " or three times, whereas by my process this trouble " is entirely dispensed with by operating as within " described."

He says (p. 323): " Heretofore the glue has been " taken in its complete state as an article of manu- " facture, has been reheated and diluted and then " applied, but such a process necessarily carries with " it all the expense of preparing the glue at first as " an article of trade or commerce. My process con- " templates taking the glue when at a proper consist- " ency and applying it to the inside of the package, " and permitting it to harden for the first time upon " that surface."

He makes no claim in this specification that a barrel so lined would be better than a barrel lined in the ordinary way, but simply mentions the saving of trouble and expense, and says that his invention " *has nothing to do with a glue-lined barrel as an* " *article of manufacture, but relates particularly to* " *a new and inexpensive process of constructing a* " *glue-lined barrel, cask*," &c.

There is only one claim in his original patent. It is as follows (p. 323):

" The within described process of coating or lining " the inside of barrels, casks, &c., with glue, whereby " the glutinous material instead of being produced " by reduction from a previously solid state is per- " mitted to attain only a certain liquid consistency

" and is then applied to the package and permitted " to harden thereon for the first time, substantially " as herein set forth and described."

After obtaining this patent he went back to Cleveland and accepted a position as traveling salesman for the defendant (p. 32), and continued in their employment until January 1, 1874. On January 10 and 12 and February 6, 1874, certain letters were written (p. 33) by the complainant to the officers of the defendant (see the copies of the letters, pp. 87 and 88). These letters show that the complainant was trying to make some arrangement with the defendant as to the sale of an interest in the original patent, and in another patent for making glue from bone, and referred to the circumstances under which he had given them information about making glue in manufacturing. In his last letter he alludes to the fact that they are proposing to employ some one at a cheaper rate than he offers and to ignore his rights, and he threatens that in that event he will have to dispose of his patents " to established glue " manufacturers who want them, and have the " means to take care of them " (p. 88).

(Mr. William Plumer, as will hereafter appear, had written to Mr. Flagler on November 19, 1873, from Lexington, Mass. (p. 316), and arrived in Cleveland at the defendant's works on January 8, 1874 (p. 20).)

Mr. Leggett testifies that about this time he was anxious to know whether his patent would hold against the defendant and to get some legal advice on that point; that the defendant would not treat with him, and would not make a contract with him to glue their barrels, and he wanted to find out what claim he had against them from some lawyer (p. 55), and thereupon he consulted Burridge & Company, patent solicitors, of Cleveland, who advised him that his patent was all right, except that it did not cover the barrel, and they ad-

vised him to have it reissued, and he thereupon applied for a reissue.

The contents of the file-wrapper of the reissue application will be found on page 309. The application for the reissue was sworn to January 19, 1874, and was filed January 24, 1874.

The new specification differed from the original specification in the following general particulars: The original Letters Patent had referred to making barrels impervious to "water, oil or any contained substance," the reissue specification referred to making them impervious to "hydrocarbon oil or any equivalent material."

The original patent had said nothing about the improving of barrels, *and Leggett's application for a reissue, sworn to by him, did not state wherein the barrels were better when lined by his process.* He, in the reissue application, strikes out various references to "glue" which were in his original specification, and speaks of lining the inside of barrels by his process of "coating or sizing."

His reissue application contains two claims. The first is the same as the claim of his original application, except that it strikes out the words "with glue" in the second line. The second claim is for "a barrel, cask, &c., coated or sized by the material and by the mode or process described."

This reissue application so made by him was examined by Mr. Hedrick, Examiner, who rejected the claim for the improved barrel on February 6, 1874, for the reason "that a barrel coated by the process "described has no features or characters to distin-"guish it from a barrel coated with glue, as prepared "in the ordinary way."

See Patent Office Letter, Record, page 314.

Thereupon Leggett's solicitors, by letter of February 27, 1874, amended his specification (see page

315) by inserting the following words: "The distin-
"guishing feature of this improvement *may be*
"*found, on examination*, to be the superior integ-
" rity of the lining by the use of soup glue; by its
" peculiar character it is more freely absorbed by
" the wood, penetrating into fibre deeper than by the
" ordinary mode. Hence, the sizing or coating is
" not only upon the surface, but penetrates into the
" wood, thereby presenting a thicker covering to the
" action of the oil, and this sizing is not liable to be
" broken off or cracked in handling the cask, as part
" of the coating is absorbed into the fibre and cells
" of the wood, which gives additional strength to it"
(see page 315). Thereafter, the next day, the amended specification was examined, and went to issue March 2, 1874, and the patent was dated March 10, 1874.

The said reissued patent is the one on which this suit is brought. It will be found on page 209.

Leggett testifies that at the time he made his application for a patent, and at the time he applied for his reissued Letters Patent, and at the time the reissued patent was granted, he had never glued an oil barrel or any barrel by his process, or seen one so glued; that his only reason for thinking that a barrel could be glued in that way was by reasoning from what he had done with gluing pieces of wood together. He testified that he first glued an oil barrel with glue by his process at Pittsburgh in August, 1874 (page 39). He afterwards changed this date to April, 1874 (page 49). He says: "I now remember
" that I made one boiling of glue and glued a barrel
" at the Central Oil Refining Company at Pittsburgh,
" in April, '74."

"x-Q. 246. But before April, '74, you had never
" glued any? A. I had not, never that I remember
" now."

His reissued Letters Patent were dated March 10, 1874, so that at the time of his reissue applica-

tion, January 19, 1874, and at the time of the amendment, February 27, 1874, in which his solicitors asserted that "the distinguishing feature "of this improvement *may be* found on examina- "tion to be the superior integrity of the lining," he had never glued or seen others glue a barrel by his process.

There is no suggestion in his original application for a patent, nor in the application for the reissue as sworn to by him does he mention in what respects a barrel glued by his process is any better than a barrel glued by the old process. He simply says his new process is a saving of "time, labor and expense, traveling "over the same ground, backward and forward, two "or three times," and his solicitors, after said examiner's letter, add that "the distinguishing features "of the improvement *may* be found, &c."

As will subsequently appear, the defendant about January 1st, 1874, employed a man named William Plumer, of Lexington, Massachusetts, to come to Cleveland, and there start glue works for them, and the defendants, several months afterwards, in 1874, began to make their own glue and to glue their oil barrels by exactly the same process which they had used before, except that they glued them with glue that they themselves made, and which had never been dried, instead of gluing them with the dried glue of commerce that they had bought and afterwards reduced to a liquid state.

Mr. Leggett testifies that he learned in June, 1874, that the defendant was lining the inside of its barrels by what he calls his process (p. 35). On November 14, 1874 (p. 326), he wrote the defendants calling their attention to the fact that over a year before "I informed you of the advantage it would be to you to manufacture your own glue." He sends them a copy of his patent, complains of their treatment of him, and says: "I am now working my process successfully and can make glue as thick as required."

He adds : "I should like to avoid all unpleasantness and arrive at an amicable settlement of this affair which I have allowed to rest until I should become more familiar with the working of your process *and develop it more fully myself.*" All this shows that he had difficulty in making his own glue and "developing" the process, which he had only suggested in his patent.

From that time, November, 1874, *continuously until he began this suit, April*, 1887, *about thirteen years, he had knowledge that they were using this process all the time, and he never, after* 1874, *had any communication with the defendants, either oral or in writing, in reference to the infringement by them of his said Letters Patent, and he never meanwhile brought suit against them or against anybody else, or granted any licenses under his patent, though he knew that the defendants and also other parties were using his process* (pp. 37 and 38), *and all this time he has owned the Letters Patent. And since* 1874, *with the exception of about six months in* 1875, *he has been continously a manufacturer of glue* (*p.* 26), *and has had an income of at least fifteen hundred to two thousand dollars a year, and has taken ont several patents* (pp. 69 and 27).

First Point.

THE COMPLAINANT CANNOT MAINTAIN THIS SUIT BY REASON OF ANY CONTRACT BETWEEN HIM AND THE DEFENDANT.

No contract is proven, and whatever promise was made by the defendant was verbal. Whatever promise was made, was nothing more than a promise not to use the pretended secret or process with-

out the complainant's consent, and without compensating him therefor. Any suit that would be brought on that promise would either be to enjoin defendant from using the process without compensation, or would be a suit for damages for a breach of said promise. Any rights that the complainant had on such promise are now barred by the Statute of Limitations. The complainant also, as he testifies (p. 47), considered that he had made a fool of himself in not having the defendant's promise, whatever it was, in black and white, and he thereupon obtained his Letters Patent, so as to protect his rights to his process or secret, waiving whatever rights he otherwise had against the defendant for the use of said process or secret. His rights to said secret and process since the date of his original patent have depended upon the validity of that patent, and not upon any contract or promise. The complainant testifies (p. 47) that after he had obtained his patent he reissued it for the express purpose of holding the defendant as an infringer of the patent. It is clear, therefore, that his rights against the defendant wholly depend upon the validity of his reissued patent.

What took place between the defendant and the complainant before the date of his patent has nothing whatever to do with this case, either as contract or as estoppel. In any legal sense there was neither contract nor estoppel; whatever rights he then had he surrendered when he took his Letters Patent and gave to the defendant and to the general public his invention subject to his right to control it by that patent. An examination of Leggett's correspondence will also show that what he had to sell to the defendant and from which he expected that the defendant would make money, was not his process for lining barrels with liquid glue, but a certain patent No. 114,602, for making glue from horn pith, which he owned or controlled and

which he now testifies (p. 88 and p. 69) he believes would have saved the defendant seventy-five thousand dollars per year. Mr. Rockefeller and Mr. Payne testify that there was no contract, and it is certain that there was none (pp. 302 and 305). The *claim of estoppel was not set up in the original complaint* (p. 1), *but only in the amended complaint filed after the defendant had taken testimony of Sargent and others in Pennsylvania showing prior use.*

(*Leggett testifies that before the suit was commenced he showed to his solicitor and counsel Mr. Felt and Mr. Reed the letters on which they now claim estoppel* (p. 48).

Second Point.

BY REASON OF HIS LACHES THE COMPLAINANT CANNOT MAINTAIN THIS SUIT AGAINST THE DEFENDANT.

The answer alleges gross laches on the part of Leggett (p. 8).

In September, 1873, he applied for the patent to protect himself against the defendant (p. 47).

In January, 1874, he told the defendants that if they went into "the glue business" he would sue them (p. 32).

In the same month he applied for the reissue so as to hold against the defendant (p. 55).

In 1880 Mr. McClung, a lawyer of Pittsburgh, advised him that he "had a good case" (p. 36).

For thirteen years he knew of the defendant's OPEN AND CONTINUOUS USE *of what he calls his process;* and during that time other parties, with his knowledge, were using the same process (p. 38). During that time he granted no licenses under his patent,

and brought no other suit anywhere to establish the validity thereof. This long continued acquiescence and unreasonable delay on the part of complainant in seeking relief is such that in a court of equity he cannot now maintain this suit for an injunction and accounting.

McLean *vs.* Flemming, 96 U. S., p. 245.
McLaughlin *vs.* Peoples' Railway Company, 21 Federal Reporter, p. 574.
Kittle *vs.* De Graaf, 30 Federal Reporter, p. 689.
New York Grape Sugar Company *vs.* Buffalo Grape Sugar Company, 24 Federal Reporter, p. 604.
Keller *vs.* Stolzenbach, 28 Federal Reporter, p. 81.
Magic Ruffle Company *vs.* Elm City Company, 13 Blatch., 161.
Speidel *vs.* Henrici, 120 U. S., p. 377.

The language of Justice Brown in the case of Galleher *vs.* Caldwell, 145 U. S. Reports, p. 372, though not given in a suit on letters patent, is applicable to this case. He says: "The cases are "many in which this defense (laches) has been in- "voked and considered. * * * A uniform prin- "ciple pervades them all. They proceed on the as- "sumption that the party to whom laches is im- "puted has knowledge of his rights and an ample "opportunity to establish them in the proper "forum; that by reason of his delay, the adverse "party has good reason to believe that the alleged "rights are worthless, or have been abandoned, and "that because of the change in conditions or rela- "tions during this period of delay it would be an in- "justice to the latter to permit him to now assert "them."

The equitable jurisdiction of the Court to decree an accounting in a patent suit can only be invoked

when there is a right to an injunction, (Root *vs.* The Railway Company, 105 U. S., 189) and it is clear that the laches of the complainant in the case at bar was such that in 1887 he had absolutely no right to an injunction, he having stood by and seen the defendant for thirteen years continuously and publicly making use of what he calls his invention. (See cases above cited, also Root *vs.* Railway Co., 105 U. S., 189). In the case of McLean *vs.* Flemming, 96 U. S., page 245, this Court affirmed the Court below as to an injunction, infringement having been proved of a trade-mark, but they *reversed that Court as to its decree for an accounting, and as to its allowance for gains and profits* (p. 257). Justice Clifford said: "Acquiescence of long standing is proved in this case, and inexcusable laches in seeking redress, which show beyond all doubt that the complainant was not entitled to an account, nor to a decree for gains or profits." See also Menendez vs Holt 128 U. S. pp 514

Leggett's only excuse for not sooner proceeding against the defendants was: "Because I was too poor to do so. I could not afford to fight so large a corporation" (p. 35). His testimony showed that from 1874 to 1887 he was earning from $1,500 to $2,000 per year (p. 70). With this money, even without having employed counsel on a contingent fee, he might have brought a suit against the defendant.

In the case of Hayward *vs.* National Bank, 96 U. S. (p. 618), this Court said: "No sufficient reason is given for the delay in suing. *His poverty or pecuniary embarassment was not a sufficient excuse for postponing the assertian of his rights.*" *

Leggett's patent expired October 21, 1890. It would be most inequitable now to order an accounting for an infringement during the entire life of the patent, which went on for thirteen years with the full knowledge of the patentee, and without any attempt to enforce his rights against the defendant

* See also de Estrada vs San Fillipe Land Co 46 Fed Rep 208
Nado vs Barden 47 Fed Rep 782

or any one else. This suit must be dismissed on the complainant's own proofs because of his laches.

Third Point.

THE COMPLAINANT'S REISSUED PATENT IS INVALID.

From the facts it is clear that the reissued Letters Patent was not authorized under the United States statute providing for reissues. The original specification was not inoperative or void, for anything that had happened by reason of inadvertence, accident or mistake of the complainant. He had stated in the original specification that his invention "has nothing to do with a glue-lined "barrel as an article of manufacture." Complainant's reason for surrendering it, as he says, was simply to cover something that the defendants were making, namely, certain glue-lined barrels (p. 55). He never at the time had lined barrels with glue, and the additions to the original patent that were made, were not made from anything that he, the complainant Leggett, knew to be the fact in regard to glue-lined barrels. It was simply an attempt by the complainant and his attorneys to put into the specification and the claims things *as to which they had no knowledge, either at the time of the original application, or at the time of the reissue.*

Fourth Point.

THE COMPLAINANT'S ALLEGED DISCOVERY DID NOT CONSTITUTE A PATENTABLE INVENTION.

The complainant's own testimony and the original patent admits that there is nothing new in his invention, except the gluing of barrels with glue that has not been first reduced to an article of trade or commerce; and the reissued patent in substantially the same language makes the same admission. The complainant testifies that glue is dried for no other purposes, except for the purposes of commerce, namely, because in its dried state it will keep longer and can be better and more economically handled. In other words, glue is dried, as the complainant testifies, for the same purpose that apples and fish are dried (see his testimony, p. 78).

The complainant's original patent says: "Take "any of the materials from which glue may be "made and proceed in the usual or any suitable "manner for the manufacture of glue until the "soup has attained a certain consistency, and "while it is in this state it is applied directly to "the inside of the barrel."

There is no pretense in the original patent that the lining of the barrel is improved in any way. It is simply a claim to invention of a process by which the drying of the glue is avoided. In other words, Mr. Leggett, in effect, says: Ordinarily people make glue and dry it for commercial purposes and sell it, and the barrel users buy the dried glue and melt it and pour it into the barrel. I have discovered that the barrel users can make their own glue and use it before it is dried, and thus save the expense of drying it. There is not a witness in the case who does not in effect testify that

glue is dried for no purpose whatever, except because when dried it will keep longer and is more convenient for sale and shipment.

The "secret" that Leggett claims to have disclosed to defendant was that *it would be a good thing for them to make their own glue.* How the defendants would have been able to have made their own glue without disclosing it to the public is not clear. The defendant company were making their own barrels and cans and paint and various other things, having found it more economical to do so than to buy them, and for the same reason they determined to make their own glue. Having determined to make their own glue, it would seem as if they had a right to use it before it was dried, without paying royalty to a man who claims to have discovered that they would save money by using it before it was dried, but who admits that he never himself glued or saw a barrel glued in that way until after his patent had been obtained, and then surrendered and reissued.

As showing that this alleged secret or process did not constitute invention, we refer to the testimony of Charles Wiederhold, one of the complainant's witnesses, who was a glue manufacturer, had been manufacturing glue in the United States thirty-five years (p. 107), and testifies that about twelve or fourteen years before his examination, while making glue from cattle feet, he found the neat's-foot oil that was part of the product, would leak from the barrels in summer, and he having heard that the oil people lined their barrels with glue, thought that he would line his neat's-foot barrels with glue, and so took some of his liquid glue right out of his evaporating pans before it was dried and poured it into the barrels and glued them in the ordinary way.

He testifies as follows, page 110:

x-Q. 42. Did you ever line any oil barrels with

glue? A. No; I didn't myself. I only remember several barrels we glued for ourselves, neat's-foot oil barrels.

x-Q. 43. When did you do this? A. About fourteen years ago.

x-Q. 44. How do you fix the date? A. It may be twelve years ago I received a large quantity of cattle feet. I bought all the cattle feet in Westchester County. We had trouble with our neat's-foot oil barrels. It was very liquid oil; the oil would leak out in summer, so we came to the idea of lining them with glue. We only did it during the summer time.

x-Q. 45. How did you do it? A. We took some of our strong evaporated liquid glue, and poured half a pail, took the heads out, and rinsed about five or six barrels with it, and then dried it.

x-Q. 46. Did you also glue the heads of the barrels with it? A. We also glued the heads of the barrels with a brush, and then headed the barrels up.

x-Q. 47. Did the barrels hold the oil with this? A. After that, the barrels held the oil thoroughly, both in summer—the oil is thick in the winter, and we don't have to line them as in summer.

x-Q. 48. Had you, before this, heard of other people lining oil barrels with glue?

Objected to as not cross-examination; counsel makes the witness his own witness.

A. Yes.

x-Q. 49. Who had you heard had done it? A. I knew that glue was used for kerosene oil barrels.

x-Q. 50. How hot did you heat the glue? A. I don't think it was more than 170 to 180 degrees.

x-Q. 51. Did you take the glue right out of your vats or coolers? A. We took it out of evaporating pans.

x-Q. 52. Before it had been cooled into a jelly? A. Yes.

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x-Q. 52. Before it had been cooled into a jelly? A. Yes.

x-Q. 53. How many barrels did you glue in this way altogether? A. I don't think I glued more than sixty or eighty in all.

x-Q. 54. But you think you did glue sixty or eighty in all. A. That's all, yes. We kept gluing some every year, till we stopped three or four years ago. We glued sixty or eighty in all, but some in each year.

x-Q. 55. How can you fix the exact date when you first glued barrels in this way? A. I can't fix it; I only guess at it. The reason I came to do it I sold dried glue to a party in New York, which I heard they afterwards sold for lining oil barrels, and as we had trouble with neat's-foot oil barrels, so I experimented myself with it in doing so.

x-Q. 56. Was your experiment a success? A. Yes, in summer, after they were dried they were tight.

x-Q. 57. Why did you not take some of your dry glue and melt it and pour it into barrels? A. Because it was handier for me to do so—use the liquid glue, and, I should think, better, too.

x-Q. 58. Why was it handy? A. It would take some soaking first if I used dried glue, and then boil it.

x-Q. 59. Why should you think it was better too? A. Liquid glue is more penetrating. Glue that has never been dried is more penetrating—free from all lumps.

x-Q. 60. How long have you known that fact? A. Since I commenced the manufacture of glue in this country.

x-Q. 61. How did you find it out? A. I experimented with it and found out that some glues were very hard to dissolve and would not dissolve at all, always remaining lumpy; also every glue would form some skins on the top of it which could hardly be removed every time it melted. As soon as one skin was removed the other formed as soon as the glue came in contact with the air.

x-Q. 62. A fresh liquid glue is better for any purpose for which glue is useful than glue which has first been hardened and remelted, is it not? A. It is, provided you can remove the water out of the liquid glue in the same proportion as you had the water in the dry glue remelted.

x-Q. 63. That is, if the liquid glue is of the same thickness, it is better than when made from dried glue? A. Yes, sir.

As further showing that there was no patentability in the process, we refer to the testimony of William Plumer, one of the complainant's witnesses. Plumer was a graduate of Harvard College in 1845 (p. 123), and became interested in the manufacture of glue about 1870. He had been written to by the defendant on November 15, 1873. On November 19, 1873, he replied to Mr. Flagler, the secretary and treasurer of the defendant. This letter is as follows, page 316:

"LEXINGTON, Nov. 19, '73.

"H. M. FLAGLER, Esq.

"Dear Sir:

"Yours of the 15th was duly received. In the first "place I know my glue '*will do*' all I claim, for I have "thoroughly tested it, and shall be glad to send you "some for a trial. I propose to secure my discovery "by Letters Patent and a trade-mark, and have "already taken steps to do so. I can also make it "water-proof if desired." (*This referred to Plumer's elastic glue* (p. 132, Int. 47)).

"I was thinking this morning, as you use so much "glue, why not make it at your own factory? "Half the cost of making glue is *drying* it. All "this could be saved, also freights. Then stock "could be bought at the West at a much "lower price than here. Of course, you use "steam, and if so, it would not cost one thousand "dollars for the tubs, &c., needed. You could

" make your own glue for one-quarter of what you " now pay, and even less, and if you so wished could " furnish other parties with glue. No skilled labor " is required, with the exception of one man, and " three or four men would be all needed. Why not " then make your own glue, elastic or not, as you " please? Either my son or myself will come on " and take charge, set the thing moving, and stay " longer or shorter as we may agree. Both my " son and myself can make any kind of glue and " from any kind of stuff. Also, both of us fully " understand the whole business in all its parts, " and just what is wanted to make the business " pay and to work to the best advantage. If you " wish to dry the glue for sale or other parties, by " the use of my patent drying machine we can " make glue every day in the year, the amount " only limited by the supply of stock. Will you " give this idea your consideration? As to myself, I " can furnish all the references desired, and pro- " vided you wish either the services of myself or " son, believe we can agree upon the terms. Hop- " ing to hear from you on this subject.

" I am, yours truly,

" WILLIAM PLUMER "

To this letter the defendants, through Mr. Flagler replied on November 22, 1873, as follows (p. 317):

" Dear Sir:

" Yours of the 19th at hand. The ideas you sug- " gest have been under consideration some time. " While we have discussed the question of making " our own glue with other parties, we are not com- " mitted to any one. If you feel disposed to come " and see us we will be glad to talk the matter over " with you."

" Yours truly,

" H. M. FLAGLER,

" Sec'y and Treas."

After this correspondence Mr. Plumer went to Cleveland, at defendants' factory, January 8, 1874, and remained with them about nine months, and superintended the building of their glue factory and the making of glue by the defendants. Plumer was skilled in the manufacture of glue at the time. Leggett had at this time never manufactured any glue or lined a single barrel. Plumer not knowing anything of Leggett's invention wrote to the defendants: "*I was thinking this morning, as you use so much glue, why not make it at your own factory. Half the cost of making glue is drying it—all this could be saved, also freight.*" The defendant replied, "we have been discussing the question of making our "own glue with other parties, but are not committed "to any one." This evidently refers to the fact that they had talked with Leggett about making their own glue. There is no suggestion and no probability that the making of their own glue was anything that Leggett or they considered to be a secret process. For the circumstances under which Mr. Plumer went to Cleveland, see his testimony, pages 23 and 131. All there was in Leggett's "invention" was in the suggestion "why don't you make your own glue, and if you do make your own glue, you need not dry it before you use it?" There was no more invention in telling them that they need not dry it before they used it, than there was in telling them that they need not put it into boxes before they used it. The object in drying it, and the object in putting it into the boxes was simply to get it into commercial shape, and all glue manufacturers and users knew that much better than Leggett did.

Judge Shipman in his opinion, states his conclusion on this point as follows, page 345,:

"The thought that the defendant, which was a "large daily consumer, could profitably be its own "manufacturer of glue, came both to the patentee

"and to Mr. Plumer, who also subsequently com-
"municated the same idea to the defendant, but
"neither is entitled on that account to be considered
"an inventor, but each is rather to be regarded as
"having prompt ability to seize upon correct meth-
"ods of conducting a large business.

"It is also true that there was no invention in the
"application of liquid glue, taken freshly from the
"tubs, to the inside of barrels. The use of such
"glue came naturally and in the ordinary line of
"thought to Wiederhold when the occasion came to
"him to line barrels; it came also to Baumann be-
"fore the date of Leggett's invention, when he was
"called upon to line neats-foot oil barrels in Peter
"Cooper's glue factory.

"Such use was undoubtedly occasionally practiced
"in that factory in other instances about the same
"time. The idea was the natural one which would
"readily occur to the intelligent mechanic in the
"factory. It is not strange that it did not occur to
"oil refiners, for they were not glue makers; it is
"not strange that it was not made public, because
"the occasion had not arrived for its development;
"it would be useless to the oil refiner who used but
"a few barrels daily, for he could not afford to man-
"ufacture glue, but, when the occasion arose, the
"proper method of doing the business naturally pre-
"sented itself to the mind of a person familiar with
"glue manufacture."

Fifth Point.

THE DESCRIPTION OF THE ALLEGED INVENTION IS INSUFFICIENT AND DECEPTIVE.

The only point about which there was any need of any accurate description in the specification was

with reference to the consistency at which the liquid should be applied to the barrels. The specification states (p. 322), that the manufacture of glue should be proceeded with "until the soup has attained a "certain consistency. This consistency must be "*considerably less than that which is required* "*wherein semi-fluid, solid, or cake glue is to be* "*produced*, and while it is in this half finished "state, so to speak, it is applied directly to the "inside of the the barrel or cask." The same language is contained in the reissued patent.

The manufacture of glue, to speak generally, is boiling hides, skins and various animal tissues until the tissue is destroyed and a product results, which is a solution of glue. The character of the solution and the value of the glue depends upon the character of the stock from which the glue is made, and the cleanliness of the process, and the care that is taken to avoid overheating. The general process of making glue is not very different from the process of making soup; a similar care should be taken, and there is no more difference in the different kinds of glue than there is in the different kinds of soup (see Professor Charles F. Chandler's testimony, p. 272. Also see testimony of Leggett, p. 65).

After the liquid glue has attained its proper consistency by boiling and evaporation, it is allowed to cool and then it is spoken of as glue jelly or liquid glue or size. It is then ordinarily cut into slices and these slices are dried on nets by natural or artificial heat, and the glue so dried is the glue of commerce. The manufacturers have by experience determined to what consistency the liquid glue should be reduced before it is allowed to cool into a jelly, and the direction of the complainant's patent substantially is, that the consistency at which it is to be put into the barrels is "considerably less than that which is required wherein semi-fluid solid or

cake glue is to be produced," and this consistency is spoken of as the "half finished state."

Leggett testifies that now that he has become a manufacturer of glue, the jelly which he cuts up into slices and dries, contains about eight parts of water to one part of glue (see his testimony, p. 73). *He also testifies that other manufacturers reduce their jelly glue before it is cut into slices, to a consistency of about five parts of water to one part of glue, and some as low as four parts of water to one part of glue* (p. 73) *He also testifies that the consistency at which glue is suitable to be used for lining barrels is, on an average, about one part of glue to five parts of water* (p. 75). *This testimony of Leggett's is confirmed by the testimony of other witnesses, and Mr. Plumer testifies that at the defendant's factory in* 1874 *he put the glue into the barrel at exactly the same consistency at which he would have used it to be cut into jelly, namely, in the proportion of about seventy-five to eighty per cent., that is four to six parts of water to one of glue* (see his testimony, p. 154).

Now, Mr. Leggett testifies (p. 75), that at the time he took out his patent he knew what percentage of water there was in ordinary glue, and that he knew what percentage of water there was in glue as it was ordinarily used by the refiners. If he knew this fact, then he stated in his patent what he knew to be incorrect, for in his patent he told the public that "*the consistency should be considerably less than that which is required whereby semi-fluid, solid or cake glue is to be produced,*" whereas, as a matter of fact, the testimony shows that the consistency should be either *more or the same* than that "which is required, whereby semi-fluid, solid or cake "glue is to be produced." It is not strange that Mr. Leggett made this mistake in his description, *he had never made glue, except in a pint pot, and he had never glued a barrel.* He had seen them glued, how-

ever, by the ordinary process, and had seen other people make glue.

The description and directions given in his specification show either that he did not then know what consistency should be used, or that knowing, he gave wrong directions.

The fact is that he did not then know, for a year later, Nov. 14, 1874, he wrote to the defendants (p. 323):

"Over a year ago I informed you of the advantage it would be to you to manufacture your own glue, and described to you the process I proposed to use, which is set sorth in the enclosed patent. * * * I am now working my process successfully, and can make glue as thick as required, which from the information I have you don't succeed in doing."

Sixth Point.

THE DEFENDANT HAS NOT INFRINGED THE PATENT.

If the making of their own glue and using it before it is dry is an infringement, then the defendant has infringed it. *If the use of liquid glue of the consistency described in the patent is necessary to an infringement, then the defendant has not infringed it.* The specification of the patent says: "In carrying out my invention I proceed as follows: 'Take any of the materials from which glue may be made, and proceed in the usual or any suitable manner for the manufacture of glue, *until the soup has attained a certain consistency. This consistency must be considerably less than that which is required whereby semi-fluid, solid or cake glue is to be produced*, and while it is in this half-finished state, so to speak, it is applied directly to the inside of the

barrel or cask.'" No witness was called who testified that the process used by the defendant was an infringement of the patent. The complainant's witness, Plumer, testified that the defendants made their own glue and lined barrels with glue that had not been dried. On his first examination he in effect stated (p. 21) that the glue used by the defendants was thinner than if they were going to make dry glue. But when called in rebuttal, he stated (p. 154) *that they used the liquid glue at the consistency that it would have had if they had been going to make dried glue.*

Plumer testified as follows (p. 154):

"x-Q. 195. Did you make any change at all after you began making glue, in the density? A. In every boiling, after I commenced making glue, I tested it in the liquid state, in the jelly state, took a cubic inch of the jelly, carefully weighed it, subsequently cut it in slices and dried it, and put the date of the boiling upon each slice, and knew in every case what density I had. Different kinds of stock required different densities, and I judged what density was required by the tenacity of the jelly and rubbing between my fingers as described. The density varied from 75 to 85 per cent. of water.

x-Q. 196. *How did the amount of water in this liquid glue which you put in the barrels, compare with the amount of water that there would have been if you had been going to make it into dried glue?* A. I SHOULD THINK THE AMOUNT IN BOTH CASES WOULD BE SUBSTANTIALLY THE SAME.

x-Q. 197. Was this liquid glue that was pumped from your settling tanks to the gluing room, good glue? A. As pumped from my settling tanks, I know that in every case it was good glue, as I had dried samples of every boiling, and kept them for several years. What might happen to it after it had left my tanks while in the gluing room I don't know.

x-Q. 198. *Was the glue in your settling tanks all in good condition at the time it was being pumped to the gluing room, to be kept in your factory, and cooled and dried?* A. *Had I at any time taken a quantity of liquid glue from these settling tanks, and put it into proper coolers used for this purpose, sliced and dried it, it would have produced precisely the same kind of glue as was in the samples made from the same boiling,* AND WOULD HAVE BEEN FIRST-CLASS MERCHANTABLE GLUE IF THE DRYING HAD BEEN SATISFACTORY.

I always took my samples from the settling tubs.

x-Q. 199. *Was it, as you took these samples out, as it was pumped from the settling tubs, in good and proper condition to be then used for any or the ordinary mechanical uses to which glue was applied?* A. I CONSIDERED IT AS GOOD GLUE AS COULD BE BOUGHT IN THE MARKET FOR ANY MECHANICAL PURPOSES, because the stock was carefully limed, carefully boiled, asfree as possible from all acids and alkalies, and was carefully and well made from selected stock.

x-Q. 200. Would the drying of it have improved it for any mechanical uses? A. None that I know of."

See also testimony of Hopper, pp. 226 and 227; also testimony of Newcomb, p. 265.

The consistency of the liquid glue as used by the defendant has never been "considerably less than " that which is required whereby semi-fluid, solid or " cake glue is to be produced."

Leggett so specified in his patent, because he knew no better. *He had never then glued a barrel.* A year later he wrote the defendants: "I am now " making my process successfully, and can make " glue as thick as required" (p. 323). He had learned that the directions of his specification were wrong.

The defendant, therefore, did not, at Cleveland, follow the process of the patent, and has not infringed.

Seventh Point.

WHATEVER ADVANTAGE THERE IS IN THE USE FOR ANY PURPOSE OF GLUE THAT HAS NOT BEEN DRIED WAS WELL KNOWN TO GLUE MANUFACTURERS AND WAS DESCRIBED IN THE BOOKS PRIOR TO 1871.

See the following testimony of complainant's witness, William Plumer (p. 139):

"x-Q. 88. Do you think that the best time to use glue for any mechanical purpose is when it is first made and before it has been dried? A. I think the best time would be when it comes hot from the tubs, having passed through the strainers, being of the right consistency.

x-Q. 89. For all mechanical purposes whatever? A. That's too broad a question. If you will define your question I will answer it. Some substances would not stand hot glue, for the heat might color or destroy them.

x-Q. 90. Can't you name some mechanical uses for which you think the glue coming hot from the tubs would not be the best? A. Glue coming hot from the tubs, I believe, would have better sticking qualities for any purpose, but there may be some purposes for which it could not be used at that temperature, though I don't specially think of any particular object now.

x Q. 91. What makes you think it would have better sticking qualities? A. Because, first, I believe glue is in the best possible condition at this time;

second, because hot glue will penetrate better into the pores of any substance than cold.

x-Q. 92. When were you first of this opinion? A. From the time I commenced manufacturing glue, and from the instructions I received from Mr. Rich and from numerous experiments made personally, and from what I understood was laid down in the books.

x-Q. 93. When did you come to this opinion? A. From personal practical knowledge, after I had commenced the manufacture of glue. Prior to that it was mere theory.

x-Q. 94. When was this? A. Last of 1869 and first of 1870; I mean my personal practical knowledge, and also subsequently to 1874.

x-Q. 95. Was Mr. Rich of the same opinion? A. He repeatedly so stated to me."

See also testimony of complainant's witness William Plumer (p. 143):

"x Q. 132. Why do not cabinetmakers use glue that has not been dried? A. First, they may not know it is better; second, few cabinetmakers or manufacturers are situated where they can obtain glue in a liquid state, and the danger of decomposition would be so great that it would be unsafe to send it any distance without the use of antiseptics, even if glue manufacturers were willing to sell out jelly in small lots. You couldn't get George Upton or other large glue manufacturers to sell small lots, unless as a special favor, in my opinion.

x-Q. 133. Why didn't they make their own glue? A. Why don't you keep a pig? I answered that carelessly and thoughtlessly, the counsel being joking and the question seeming so ridiculous and unreasonable, and hereby apologize for the same, and the apology has been accepted, and did not consider it an answer.

Cabinetmakers could not afford to have appliances

for manufacturing glue, and unless they had the practical experience and knowledge of glue manufacturers could not do it."

See also Plumer's testimony, page 144:

"x-Q. 140. If such a man had selected you and put you in charge, prior to 1873, of the making of his glue, wouldn't you have had sufficient knowledge to know whether or not the glue needed to be dried before using? A. *From my reading, from my instructions from Mr. Rich, from my careful experiments, I should have, without doubt, suggested the importance of using the glue in a liquid form when it was practicable, and when the daily production could be used at once.*

x-Q. 141. Why? A. First, because it would save the expense and trouble of drying and the losses resulting therefrom; second, because I believe the article thus prepared would be better.

x-Q. 142. Do you think Mr. Rich would have suggested the same thing if he had been employed? A. I should think he would, although I have no absolute knowledge of what he would have advised. I believe he would."

See also Plumer's testimony, page 147:

"x-Q. 156. Would not the practical glue maker know that such liquid glue as it passed through the strainers was at least as good for ordinary mechanical purposes as if it should be reduced to the dry state and afterwards water added to it and it remelted to the same consistency as it then existed?

Objected to.

A. I don't know what he might know, but he should know that it would be better.

x-Q. 157. Why should he know this?

Objected to.

A. Because I believe the glue is better, and a practical glue maker should know his business so well that he can tell or know when the gelatine or liquid glue is in the best condition for use.

x-Q. 158. Was there anything printed in the books published before 1870 that would enable the practical glue maker or practical chemist to come to any conclusion on this point? A. I think the books plainly state that continuous boiling or excessive heat injures the texture of the gelatine.

x-Q. 159. What should the intelligent glue maker or practical chemist have understood or inferred from this?

Objected to.

A. I don't know, but *I* should have thought a long continuous boiling, reheating and remelting would depreciate the product.

x-Q. 160. Would you have understood, or inferred, or thought, from what the books said, that the glue would have been any better for mechanical uses if dried than it was before it was dried? A. I always understood from the books and my general knowledge that the glue was dried for the purpose of keeping it as a staple and merchantable article. With my later experience and teachings of Mr. Rich, and my practical experiments, I should have thought the glue was better before it was dried and never reheated."

See also Plumer's testimony, p. 150:

"x-Q. 171. How long has glue been known and its adhesive properties recognized? A As I understand it, from where the memory of man runneth not to the contrary.

See also Plumer's testimony, page 151.

x-Q. 181. Is it not reasonable to suppose that the method of drying glue so that it would be easily pre-

served and transported for commercial purposes was discovered after it was discovered that glue not dried was valuable for various mechanical purposes by reason of its adhesive qualities?

Objected to.

A. As the arts and sciences advanced and there was a demand for adhesive products, the necessity of the case compelled some method to be discovered or invented for preserving these products in a staple form. I think this may be very probable.

x-Q. 182. Is glue not dried for the same objects that fish and meats and fruits are dried, viz., to keep it from destruction and to put it in a form where, when needed, it can be used for the purpose for which it was useful before it was dried? A. I understand glue is dried for such purposes, to preserve it and to put it in commercial form convenient for use and transportation.

x-Q. 183. Is it dried for any other purpose that you know of other than you have just named? A. If I understand the question correctly *the object of drying glue is to have it in a convenient form where it will not suffer loss from decomposition, and can be readily transported from place to place.*

See also the testimony of complainant's witness, Charles Wiederhold, page 112:

"x-Q. 57. Why did you not take some of your dry glue and melt it and pour it it into the barrels? A. Because it was handier for me to do so—use the liquid glue, and I should think, better too.

x-Q. 58. Why was it handy? A. It would take some soaking first, if I used dried glue, and then boil it.

x-Q. 59. Why should you think it was better too? A. Liquid glue is more penetrating. Glue that has never been dried is more penetrating—free from all lumps.

x-Q. 60. How long have you known that fact? A. Since I commenced the manufacture of glue in this country.

See also the testimony of complainant's witness, Charles Wiederhold, page 119:

x-Q. 168. Is there any object or purpose that you know of in reducing glue to the dry state, except to get it into a condition where it will keep better and where it will be easier and cheaper to transport it? A. Not that I know of.

x-Q. 169. So far as you know or have ever heard, is glue that has once been dried and then afterwards reduced to a liquid state, better for any purposes of use than liquid glue which has never been dried and which contains the same proportion of water. A. No, it is not. You mean if dry glue is dissolved with the same amount of water as liquid glue would contain—the dry glue so dissolved is not better, but even liquid glue might be preferable.

See the following testimony of defendant's witness, Professor Chandler (p. 276):

Q. 43. Have you brought with you any books published prior to 1873 which show or make reference to the sale of glue in its liquid or jelly form for commercial purposes?

A. I have.

Q. 44. Please refer to some of them?

A. Well, here is Wagner's "Jahres Bericht Der Chemischen Technologie" for the year 1869. On page 657 is an account of an article which was published in several different trade journals in Germany. References are given in the year 1869 with regard to the sale of glue in the form of jelly without previous drying. The author states that it is found that the adhesive and binding property of the glue is decidedly injured by the process of drying in

the air, and that at the glue manufactory near Dresden they are now selling the glue in the form of a jelly put up in barrels. In this way they furnish a glue of uniform quality, which it is only necessary to warm to make use of for all the purposes for which glue is employed. In the same work, which is an annual publication, for the year 1870, on page 671, is a further account of an article by another author, published in different trade journals in Germany, with regard to the advantages of buying glue in the form of a jelly. The author states that it is especially useful to the manufacturers of cloth, paper and matches and to the carpenters and instrument makers and to the bookbinder. In the same work for the year 1871, on page 839, is reference to another article published in the German trade journals on the same subject, which simply enlarges upon the advantages of this glue jelly over the dried glue.

In Jacobsen's "Chemisch Technisches Repertorium" for the second half of 1869, on page 49, is an article on this same subject which appeared in these different German trade journals, explaining how this glue jelly has found its way into the trade as a substitute for dried glue; and in the same work for the first half of the year 1870, on page 79, is an article copied from one of the German trade journals on the advantage of this glue jelly as a substitute for dried glue.

In the "Repertorium der Technischen Literateur" for the year 1869, published by F. Schotte, on page 158, is reference to an article on the improvement in the manufacture of glue, avoiding the drying. On page 219 is reference to an article on experiments in glue in the form of a solid jelly. On page 348 is reference to an article on glue jelly. On page 607 is an article on glue jelly; its cheapness and other advantages, and also on improvements in the manufacture of glue. Also relating to this subject, in

Bruno Kerl's "Repertorium der Technischen Literateur," on page 777, are references to four different articles on the subject of the use of glue in the form of jelly. One of these is by Stalling, quoted from numerous trade journals. The second is by Rentsch, the third is mentioned without the name of an author, and the fourth is by Clauss. The first and second were published in 1869, and the third and fourth in 1870. These are all the books I think of before 1873.

Q. 45. These books are books that are regularly published and accessible to all persons, are they not?

A. They are.

Objected to, unlesss the Professor knows all about it.

Q. 46. (By Complainant's Counsel). Have you been in Germany and seen them.

A. I have been in the habit of receiving these books ever since they were published.

Q. 47. You don't know anything about their authenticity, do you?

A. I know that they are the standard books on chemical industries, and are books that everybody goes to for information, and these articles that are contained in them are quoted from the regular trade journals in Germany. I have been in the habit of receiving these ever since they have been published. I have received them from year to year ever since they came out.

By Defendant's Counsel:

Q. 48. All of these books you have had in your library here since the year following their publication? A. I have had all of them; yes.

Q. 49. The several books that you have cited refer to the trade journals in which the articles are published, so that they could be identified, do they not?

A. Yes; the author gives the volume, the date and the page.

Q. 50. And these books are not simply for the chemist, but for the practical tradesman and manufacturer, and persons connected with the art, are they not?

Objected to as leading.

A. Yes.

Q. 51. Will you hereafter prepare extracts from the books in the German language showing the parts which you have translated--copy them in German, and add them to your examination? A. I will.

See these extracts from the publications cited by Prof. Chandler, pages 287 to 299, original and translations.

See also Letters Patent granted to Tweddle, August, 1866, page 317. Also Letters Patent granted to Dietz July 1868, page 318.

Prof. Chandler testifies that the books quoted from are standard works on chemical industries, and are books that everybody knows contain information as to such industries, and states that he has had them in his library in New York since the year following their publication.

From said extracts it is clear that previous to 1869 manufacturers in Germany were manufacturing liquid glue and selling it in its jellied form for the purposes for which glue in its dried form is used.

It is stated in these books that glue made in this way is better and cheaper. Assuming that there would have been any invention in complainant's process, if he had been the first one to have suggested that oil barrels should be lined with glue that had never been dried, certainly such invention

was not new in view of the extracts from printed books quoted by Prof. Chandler. If liquid glue was used or its use recommended for any purposes for which dry glue could be used, certainly there was no invention in selecting or suggesting some particular use for which liquid glue was as well or better adapted than glue which had been once dried.

These foreign publications are competent as evidence of the state of the art and as foundation for the inquiry whether Leggett made any patentable invention.

French *v.* Carter, 137 U. S., 239, 245.

Eighth Point.

COMPLAINANT'S INVENTION WAS ANTICIPATED BY THE PRIOR USE AND SALE OF LIQUID GLUE OR "SIZE" FOR USE IN PAPER MAKING AND OTHER PURPOSES.

"Size" and "liquid glue" are synonymous terms for the same substance, namely, for glue that has never been dried, but which remains in its liquid or jellied form. There are various qualities of this size or liquid glue in the same way that there are various qualities of dried glue, and this size or liquid glue has different densities; that is, some contains more proportionate amount of water than others, but the name "size" and "liquid glue" is the common name distinguishing glue in the jelly or liquid form from glue in the dried or commercial form.

See testimony of complainant's witness Weiss (p. 102):

x-Q. 172. "Is not size or liquid glue the common

name that is applied to glue that has never been dried? A. Yes; sizing they generally call it."

See also testimony of complainant's witness Wiederhold (p. 116):

"x-Q. 125. What is the difference between size and liquid glue? A. We call it size when it is highly evaporated."

x-Q. 126. Is size more highly evaporated than liquid glue? A. Liquid glue is that as it just runs out of the kettle as we draw it off after boiling. Size is evaporated liquid glue."

See also testimony of complainant's witness, Upton (p. 167):

"x-Q. 81. What is the difference between what is known in the market as size, and your jelly glue? A. The term "size" is applied to jelly glue, liquid glue and also paper stock, as well as some grades of glue which are used for sizing, and is rather indefinite.

x-Q. 82. What is the meaning of the word sizing, as you use it in your last answer? A. A glue in some form which is intended to form a surface on some material, such as paper, cloth or oil barrels.

x-Q. 83. You mean on the outside of oil barrels, or inside of oil barrels, or both? A. Inside of oil barrels.

x-Q. 84. Then sizing, as I understand you, may mean glue in a dry state, or in a jelly state, or in a liquid state? A. It would properly apply to glue in a jelly or liquid state. In my answer above, I might more properly have called dry glue used for sizing purposes a sizing glue, and I think that would be a more generally used term for it.

x-Q. 85. Is your glue in the jelly form ever sold under the name of size or sizing? A. Yes.

x-Q. 86. Is this glue in jelly form made both of

good quality and poor quality? A. Usually the medium and best qualities.

x-Q. 87. What quality of jelly glue or sizing is used by paper makers? A. The best.

x Q. 88. *If this jelly glue or sizing which is used by paper makers were cut in slices and dried what quality of dried glue would it make?* A. *It would make a good glue;* by paper makers, I refer to writing paper manufacturers.

See also testimony of complainant's witness, Milligan (p. 175.)

"x-Q. 87. How long have you known gelatine, or size to be made and sold as an article, in the market? A. About twenty years.

x-Q. 88. Can you name anybody that used to make and sell it before you began in 1874? A. I recall a Mr. Carew, who used to make and sell sizing. I can think of no other for the moment.

x Q. 89. Did not this Mr. Carew have his factory at Rahway, N. J.? A. Yes, sir, he did.

x-Q. 90. *Is the gelatine and size that you make and sell, suitable to do any kind of work that could be done with the same quality of glue if it had been dried and then, by remelting, reduced to the same strength?* A. *Yes, if the alum is not added to it.*

x-Q. 91. Do you always add alum to it? A. No.

x-Q. 92. How did the gelatine or size that Mr. Carew made and sold, compare with what you were making and selling for fourteen years? A. My recollection of Mr. Carew's size is, that it was as opaque, muddy character; mine is clear and superior."

See also the complainant's own testimony (p. 60:)

"x-Q. 423. Before this time some of these paper manufacturers had been in the habit of making

their own size from glue stock, had they not? A. They had; yes, sir.

x-Q. 424. And some had been in the habit of buying size from glue makers, had they not? A. Not that I know of.

x-Q. 425. And some had been in the habit of making their size by buying hard glue and reducing it to a liquid form by the addition of water, had they not? A. They had; yes, sir.

x-Q. 426. And all that before your discovery? A. Before my discovery; yes, sir.

See also testimony of defendant's witness Adrien Queru (named in said Milligan's evidence as "Carew"), who testifies that he and his father commenced the glue business at Rahway, New Jersey, in 1868 or 1869, and continued till 1873, and that they there made glue, and that after they thought it was boiled enough, and thought it thick enough, they ran it out into barrels, and sold it in barrels, and sometimes in tubs, in the form of what they call "size," which was a kind of jelly, and that they used to sell this "size" *to picture frame makers* and wall-paper makers, *and he thinks to oil barrel men*, and he gives their names. *He testifies that if he had, instead of running the size into barrels, allowed it to cool and cut it into strips or slices and dried it, it would have made hard glue of good quality* (see his testimony page 233, *et seq.*).

These witnesses prove that prior to complainant's invention, size or liquid glue was in the market for sale to persons who wished to use it for any purpose for which they could have used dried glue. If there was any invention by the complainant in using liquid glue instead of dried glue, it was anticipated by this public manufacture and sale of size or liquid glue.

Ninth Point.

THE COMPLAINANT'S INVENTION WAS ANTICIPATED BY THE MANUFACTURE, BY WRITING PAPER MAKERS, OF THEIR OWN "SIZE" OR LIQUID GLUE, AND BY THE USE THEREOF BY THEM IN THEIR BUSINESS.

One of the defendant's witnesses, Henry D. Cone, testified fully on this point and is uncontradicted.

See pp. 256 to 261.

He testified that he has been a paper manufacturer at Great Barrington, Mass., since 1856, and has been an owner of a paper mill since 1861; that during all this time he has been accustomed to make size or liquid glue by buying various hide cuttings, or hide scraps, or other substances from which glue can be made, and soaking them and boiling them and melting out the sizing; that sometimes he also had made this sizing by buying dried glue from glue manufacturers and dissolving it into liquid sizing; that sometimes he has added alum to this size so as to preserve it from decomposition, but that he had used the size both with and without alum, and that the size so manufactured by him, either from hides or from dried glue, has been used by him in his business for "sizing," as it is called; that letter paper is passed through the vat of sizing and the extra glue squeezed out by passing it between rollers; that the object of so treating the paper with sizing was to saturate the sheets so as to make the paper impervious to water or ink, so that the ink would strike in and not spread.

Mr Cone testifies that he knew that other paper manufacturers, Owen & Hurlbut, Platner & Smith, Benton & Garfield, all of Lee, Mass., have made their own sizing or liquid glue, and used it in their

business before it has been dried, ever since the year 1856.

See page 259.

He also testifies that sometimes he evaporated this sizing sufficiently so as to cut it into slices and dry the jelly on racks, and so make the dried glue of commerce (p. 259).

"Q. Did you ever make any of the sizing stronger or heavier by evaporation or more boiling. A. Yes; we sometimes boil it so strong that it jellies, and *we cut it up into slices and dry it on racks for glue, which we have more or less used about the mill in gluing up joiner work, and for use where we want a very strong, tenacious paste or sticking substance.*"

These paper makers who made their own size or liquid glue used the very thing that the complainant mentions in his patent. But they used their size or liquid glue for sizing paper instead of for sizing barrels. Leggett in his reissued patent describes the liquid glue as being "applied directly as a coating "*or sizing.*"

And, in the second claim, he claims "a barrel, "cask, &c., coated or *sized* by the material, &c."

This shows that Leggett himself recognizes the uses made by him of liquid glue or *size*, as similar to that before made by paper makers and others.

Tenth Point.

LEGGETT'S INVENTION WAS FULLY ANTICIPATED AT PETER COOPER'S GLUE FACTORY.

On pages 325 to 341 inclusive, will be found the evidence of prior use of the alleged invention at the long established glue factory of Peter Cooper,

in Williamsburgh (Brooklyn), New York, where, in connection with the manufacture of glue, was produced neat's-foot oil, which was sold to customers. To prevent the leakage of this oil, and especially when it was to be shipped to distant places, the barrels were first lined at said factory with hot, liquid, undried glue. Three employees testified. Each has been regularly working at said factory for more than thirty-seven years. One of them has been the foreman or assistant foreman for twenty-five years. The presumption certainly is that such witnesses are credible, when they are testifying as to the simple process of lining neat's-foot oil barrels at the factory. Mr. Charles W. Cooper, one of the firm, also is a witness. Mr. Joseph C. Hewitt produced certain of the firm's books, and testified as to certain entries showing sales of neat's-foot oil. And Mr. William B. Weir, the New York agent of a San Francisco firm, produced and testified as to certain papers and accounts in connection with said sales.

On page 325 will be found the evidence of the first witness Franz X. Baumann. He has worked at the factory since 1850. As to the lining of oil barrels he says, that his father, Charles Baumann (known there as "Old Charley"), "knowed how to do it. He "done the same things as I done. We helped each "one another" (p. 326).

His father was a cooper, and went to work in this factory in 1859 (p. 326), and died in Brooklyn, N.Y., on March 11, 1874 (p. 326).

Mr. Charles W. Cooper remembers this Charles Baumann. He was asked (p. 334):

"Q. Have you made any examination of your "wages book for the purpose of seeing when he "ceased to be in your employ? A. I have.

"Q. What do you find? A. I find by the wages "book I have here, *the last time that he worked at*

"*our factory was the week ending November* 27, "1871. The last time I find his name appearing on "the roll is the week ending December 11, 1871. I "have searched the roll until March 16, 1874, with- "out finding his name again."

This is important, as the three employees testify that at different times these Baumanns *together* lined neat's-foot oil barrels with the liquid undried glue produced in the factory.

Franz Baumann says (p. 325) that he had instructions to line the barrels. He took them from the cooper shop, "alcohol barrels, and some "were new barrels" (p. 328). On page 325 he testifies: "I put the barrels where the glue was. I "then took the bung-starter and took the bungs "out and put the glue in. Then I put the bung "back again; and I had help, and I tossed the bar- "rels around every way for about ten or fifteen "minutes. Then I took the barrels back and put "them on a skid with whatever glue was in it, and "it ran out of the barrels."

Afterwards they were filled with neat's-foot oil and shipped to customers at distant points.

(P. 326) "Q. *Where did you get the glue from with which you and your father lined the barrels?* A. *I got it from the coolers*, OR FROM THE CARRIER'S BOX."

(On page 331, the foreman, Williams, describing these, says: "THE CARRIER IS A BOX ON WHEELS, "WHICH CONVEYED THE GLUE FROM THE BOILER TO "THE COOLERS. "*The coolers were to receive the glue* "*for the purpose of chilling.*")

Baumann says that when he took up the glue it was in a liquid condition—"it would run out, you "could dip it up" (p. 326).

On page 327 he said: "*Q. How had the liquid glue* "*got into these coolers or boxes?* A. *It came from* "*the boiler, and was put into the cooler so it would*

"*chill.*" In the regular course of glue manufacture at the factory the glue was kept in the coolers until "sort of chilled, so that we could handle it and be "dry," and then would be taken upstairs in the loft and cut through a machine and laid out on the nets to dry to use (p. 327).

He testifies (p. 327) that in lining the oil barrels he never used any glue that had been cut into slices and dried (p. 327).

He poured in a gallon or two of the liquid. "We had plenty," and let it remain fifteen or twenty minutes. After lining the barrels, he examined (p. 329) the inside by means of a wire, to which was attached a lighted lamp.

"Q. 66. Now, where do you say that you got this "glue from, that you say you put into these barrels? "A. *From the coolers, or from the box.*

"Q. *What was it put into the boxes for?* A. *So "as to be carried from the kettle to the coolers.*"

He says (p. 329), that the time which the glue would be kept in the cooler, "depended on how hot "the weather was. Maybe ten hours, or twelve "hours—sometimes a day—sometimes six hours—"sometimes two hours." This refers to the making of dried glue.

Further (p. 329), "*I took it just as it run out of the "box into the cooler, or out of the cooler, either one. "If the box got empty and was taken away, I took "it from the cooler.* THE GLUE HADN'T BEEN IN THE "COOLER A MINUTE.

Q. 76. Then why did you say it had been in there "from six hours to a day, some of it? A. *Not for "lining the barrels.*'

As to the temperature of the glue which he used, he says (p. 330). "*All I know,* IT WAS HOT."

Confirming Baumann's evidence, Francis F. Williams testifies (p. 330) that he has been working at Peter Cooper's glue factory about thirty-eight years.

and has been foreman or assistant foreman for twenty-five years; that he knows Franz Baumann and knew his father "Old Charlie." He says (p. 331) as to lining barrels with glue:

"*I have seen Old Charlie helped by F. X. Bau-*
"*mann, whom we called Ferry. I have also de-*
"*tailed boys to help to line the barrels. The glue*
" WHICH WAS USED FOR LINING THE BARRELS WAS NOT
" DRIED GLUE. * * * *I remember distinctly of*
" *seeing them glue the barrels,* and the place is what
" was known as the south end of the factory."

"Q. 10. *In what condition was the glue that was*
"*poured into the barrels and where did they get it?*
" A. The glue was liquid. *They got it from a car-*
"*rier or cooler,* and I have also a recollection of
"taking it from an iron pot."

Williams testifies that the object of lining the barrels with glue was to prevent leakage, and that after the barrels were so lined they were filled with neat's-foot oil and shipped to distant customers.

When Williams was asked when he remembered to have seen "Old Charlie and his son F. X. Bau-
"mann at work lining these barrels," said: "Well,
"that is very difficult for me to say, *but it is safe to*
"*say twenty years ago,*" that is, 1868.

Complainant's counsel was careful not to cross-examine this witness.

Alexander Stevens testifies (p. 332) that he has worked at Peter Cooper's glue factory for thirty-seven years; that he saw Franz Baumann and his father, "Charlie" Baumann, lining barrels with glue at said factory "about twenty eight years ago." Witness "had charge of the fires and of three
"boilers where they boiled the feet." * * * "*When*
"*I seen them doing it, they took it out of the evapo-*
"*rator,*" a long box used for evaporating the glue.
"When it gets out of the boiler we put it in there."

Mr. Cooper testifies (p. 335), that they gave up using this evaporator "*some time during the war.*"

Joseph C. Hewitt, a clerk for twenty years in Peter Cooper's glue factory, testified that he knew Silas W. Johnson, who was for many years the purchasing agent in New York of the San Francisco firm of Cameron, Whittier & Co. (and its successor, Whittier, Fuller & Co.), dealers in paints and oils. The said agent died in 1887 (p. 336).

Mr. Hewitt testifies (p. 335) that said Johnson, for said firms, bought neat's foot oil of Peter Cooper's glue factory; that he (Hewitt) has charge of the books of said factory; that he has examined them for the years 1855 to 1867, inclusive, and *finds in each year sales of said oil to those firms;* that in 1863 there were six sales made, viz.: May 9, three barrels; May 25, four barrels; June 22, four barrels; July 10, *five barrels*; August 22, three barrels; September 10, five barrels.

And Mr. Hewitt produced the books which he had examined and which show the said sales.

William B. Weir, who has been the New York agent of said San Francisco firm since 1885, and who was with said agent Johnson from 1879, testified (p. 336) that he (Weir) has in his possession certain books and papers of Mr. Johnson and of the said New York agency of said California firms; that he has examined the same, and finds an order to Mr. Johnson, signed "Cameron, Whittier & Co.," directing Johnson to buy various articles, and endorsed "Order. April 23d, 1863."

This paper is printed on pages 339–341. One item in this order is as follows (see p. 340):

"*Neat's-foot oil. 5 Bls. Cooper's No. 1, in good bls. reglued.*" The original of this order was produced. Mr. Weir testifies (p. 337): "Q. Is it in the same handwriting that you find in other papers addressed by that firm to Mr. Johnson? A. At that time. Yes, sir."

Mr. Weir also found among said papers and produced an original bill from Peter Cooper to Cameron, Whittier & Co., dated October 3, 1864, for three barrels of neat's-foot oil (see p. 339).

Charles W. Cooper, one of the firm, says (p. 333) that Charles Baumann worked for them a long time as also have the employees who testify in the case. He has no reason to doubt their truthfulness. He said that neat's-foot oil barrels were lined at the factory for shipment to California, but he cannot fix the dates accurately.

The testimony of these several witnesses shows conclusively that Peter Cooper & Co. for years prior to December 1, 1871, lined neat's-foot oil barrels *with hot glue that had never been dried*, and especially that the five barrels charged on July 10, 1863 (p. 336), to Cameron, Whittier & Co., were so lined. (The complainant's witness, Wiederhold, lined his neat's-foot oil barrels with liquid, undried glue (p. 107) in the summer, because they especially leaked then. Did not Peter Cooper & Co. do the same thing in July, 1863?)

The testimony of the witnesses as to the material facts is confirmed; the dates are fixed by the death of Charles Baumann, by the wages-book of the factory, and by their books and by the books and papers of the San Francisco firm and of its agent.

There can be no doubt but that the Cameron, Whittier & Co. order, dated April 23, 1863, was executed by their agent Johnson, whose testimony, if this suit had not been so long delayed (thirteen years), might have been obtained. But he died in 1887.

The prior use of the alleged invention at Cooper's factory is established. In the language of the Court below (p. 345): "The idea was the natural "one which would readily occur to the intelligent "mechanic in the factory."

Eleventh Point

RANSOM H. SARGENT, WILLIAM H. ABBOTT AND WARREN W. GREEN WERE PRIOR USERS OF THE ALLEGED INVENTION.

After the completion of the testimony establishing such prior use and before any other of defendant's witnesses had testified, the complainant saw fit to amend the bill by alleging that the defendant was in equity estopped to deny or question the validity of the patent. In view of the complainant's testimony (p. 48) that, before the bill was filed, he had disclosed to his solicitor and to his counsel all the facts on which said estoppel was based, it is to be supposed that the said amendment was deemed necessary by reason of the said testimony as to prior use by Sargent, Abbott and Green. At any rate, the amendment was made shortly after the testimony had been taken.

1. *Prior use at Conneautville*, (Crawford County), Pa., which is a small town in the extreme northwestern part of the State. The witnesses are: Ransom H. Sargent, of Titusville, Pa. (p. 211); William L. Robinson (p. 218), and John S. Eldridge (p. 221) both of Conneautville. There is also a stipulation (p. 223), as to what would be the testimony of Herman Munch, of Conneautville, if called.

Ransom H. Sargent was examined in Titusville. He has lived in that region all his life. From 1857 to 1861 he was postmaster at Conneautville. Since then he has been chiefly engaged in the oil business as refiner and producer. In 1861, to carry on at Conneautville the oil refining business, he formed a partnership (Sargent & Robinson) with the witness William L. Robinson and David D. Williams (now deceased), who at that time were copartners at Con-

neautville, keeping a general country store under the style of Robinson & Williams. The witness Robinson has ever since continued in business there.

In 1861 the petroleum business was in its infancy. The refinery of Sargent & Robinson, at Conneautville, commenced in October, 1861, to refine oil and continued until the spring of 1864, when the business was removed to Petroleum Centre (fol. 211).

Sargent, Robinson and Eldridge testify that at said refinery in Conneautville oil barrels were lined with liquid undried glue made at said refinery from scraps of hides—tanners' scraps—procured at a tannery which was situated near the refinery, and which has been operated ever since as a tannery.

Sargent says (fol. 212): "We bought the barrels from different barrel makers throughout that country. We shipped the refined oil in barrels by canal, and later by railroad, and by wagons to our customers in the immediate vicinity. These barrels were lined at the refinery." He says (p. 212): "I don't know but that at first we used the hard glue and melted it. I don't know as we did; can't say." The workman (Eldridge) says (p. 221): "We first commenced and used glue that we bought." The tannery at this time was owned by one Daniel Hammon. It was near the refinery. On page 218 Sargent testifies:

"Q. How did you first come to use those scraps for making liquid glue, as you have described? A. The first intimation I had was from Daniel Hammon, the tanner. He asked why I didn't buy his scraps and make our own glue I told him I hadn't thought of it. He said it would be a good deal cheaper and just as good, if not better, and that we could convert the scraps into glue as well as we could the hard glue."

Sargent testifies (p. 212): "Pretty soon after we commenced operating we made our own glue from scraps bought at a tannery near by. The

" tannery was owned by Daniel Hammon. The " scraps consisted of dried pieces of hides, odds and " ends of hoofs."

Robinson says (p. 219): "The scraps were bought " at a tannery owned by Mr. Hammon, near the re- " finery, not far off; his name was Daniel Ham- " mon.

"Q. What were these scraps of leather? A. " Scraps of hides rather than leather."

Eldridge says (p. 221): "After a short time we " went to getting scraps at a tannery and boiled " them.

"Q. What do you mean by scraps? A. I mean " the clippings of the hides.

"Q. (p. 222.) Did you personally get any scraps at " said Hammon's tannery for use in the refinery? " A. Yes, sir.

"Q. How often? A. That I could not tell you. " When we got out we would go and get more; " sometimes I think Hammon sent them over."

Herman Munch (see stipulation, p. 223) would have testified "that he worked for Daniel Hammon, " and delivered to the refinery of Sargent & Robin- " son, Conneautville, scraps of hides from time to " time during the period testified to by the wit- " ness."

Sargent was asked (p. 212) if they procured scraps from any one else than Hammon. He replied, "I " can't say positively, but I know that we made an " effort to get some of other parties, as he did not " have enough." He produced a book of entries made by him at the refinery. It contains items showing purchase of scraps from Hammon (see p. 215).

There can be no doubt but that Sargent & Robinson procured scraps of hide, &c., from Hammon's tannery.

Now, what did they get them for? To make material with which to line the oil barrels. Sargent

says that Hammon suggested the use of the scraps. Certainly Hammon would not have continued to sell, or Sargent & Robinson to pay for scraps from which proper "glue lining" could not be made. The barrels had to be satisfactorily lined. They were to be shipped by rail, by canal, and by wagons. And this required good lining. For nearly three years the refinery was operated, and it is fully proved, that, except at the very first, the barrels were all lined with material made from scraps bought by the proprietors of the refinery.

Now, as to the process, Sargent says (p. 212), that they "*boiled the scraps until we extracted the glue* "*from them, and boiled it down to a suitable con-* "*sistency, and, while hot, we put it into the barrels,* "and bunged them up, and shook the barrels over "and over, end over end, and swashed this glue in- "side while hot, so that it came in contact with all "parts of the barrel." And on pp. 213, 224:

"Did you personally boil those scraps as de- "scribed?

"A. I did.

"Did you personally pour the hot liquid made "from these scraps into the barrels, and line the "barrels as you have described.

"A. I did.

Q. What did you use to call this liquid? A. Glue lining.

Robinson says (p. 219) that the scraps were put into a kettle and boiled "until they formed glue." Then, while hot, the liquid was taken out of the kettle and put in the barrels as a lining. He states that this process of lining was continued regularly at the refinery He says that Eldridge worked there. He also identifies the "Refinery Book." Mr. Robinson has been in business in Conneautville for forty years as a storekeeper there. Not one

word of evidence is produced to contradict his statements.

Eldridge (p. 221) helped to build the refinery, and worked there "for more than two years off and on." He says (p. 222): "Q. What was done with the "scraps after they were brought to the refinery? "A. We boiled them until they became a glue; we "had a stove in the building where we stored bar-"rels.

Q. How did you line the barrels? A. I explained that before. We poured the glue in hot.

Q. What do you mean by glue; do you mean *what was in the kettle after boiling the scraps?* A. Yes, sir.

Q. You poured this hot glue into the barrels? A. Yes, sir.

Q. Would you fill the boiler with the scraps? A. Very nearly, put some water in it. We used a skimmer also to skim out the dirt that was in it."

The cross-examination of this witness Eldridge was waived.

On page 213, Sargent was asked:

"Q. How did you experiment to get the knowledge as to the right consistency of the liquid in the kettle? A. We would pour it into the barrels hot from the kettle. We took the head out of several barrels that was lined with the different consistencies to see the thickness of the lining or coating on the inside of the barrel."

As to the treatment of the scraps, Sargent says (p. 216): "My recollection is that we put them in just as we got them from this tannery into this kettle.

x-Q. 9. And when you got them from the tannery, they had the hair on, had they? A. Some of them had—some parts—and others hadn't.

As to the kettle used, he states (p. 216), that it would hold about two barrels of water. "When we made the material in the caldron we built a fire around it. When we used the kettle we set it on the stove."

x Q. 16. How long on an average did you keep it on the fire? A. I can't tell. *It depended on the heat.* Perhaps a day."

And on p. 217 he says (x-Q. 26): "Sometimes we soaked the scraps over night, and sometimes we had a slow fire. When we were in a hurry for the glue we cooked them faster. I can't recollect the shortest time.

The complainant, by the testimony of various expert glue manufacturers, seeks to discredit these Sargent witnesses and to show that what Sargent produced at said refinery from said scraps would have been of inferior quality and would not "have made a serviceable lining for the inside of oil "barrels." But (except Plumer) the men that so testified never lined barrels themselves, and are themselves making glue with all the patented improvements and by means of the secret processes known to themselves only.

Undoubtedly their glue is better than Sargent and Robinson's.

The latter's product, if allowed to cool and to be cut in slices and dried, undoubtedly would have been dark-colored, and it might not have been salable.

But what they produced was nevertheless the "glutinous material" mentioned in Leggett's patent. And they put it in their oil barrels "at the "proper consistency and in the half-finished state, "so to speak." And they did it a dozen years before Leggett's patent was obtained.

There is nothing in that patent which refers to the quality of the glue which is to be used, or the method by which the glue is made. The complainant's witness, Weiss, stated (p. 105) that there are

more than a dozen different grades or numbers of glue, varying in price from 5 to 37 cents a pound.

The testimony of the complainant's witnesses Weiss (p. 99), Wiederhold (p. 115), and Plumer (p. 149) practically admits that Sargent produced glue by what he did at the Conneautville refinery.

On page 275, Professor Chandler having read the evidence as to what was done by Sargent, said that *the product of the boiling was glue.* On page 280 he says: "If the tanner's scraps were boiled without "liming them, the glue would not be quite so clean, "that is all. It would be as good for many pur- "poses. Its strength would depend entirely upon "the condition of the skins. If the skins were "pretty clean the glue would practically be about as "good as if they had been limed; but if the skins "were very dirty, of course that dirt would dilute "the glue, and injure its quality. If the hair was "on it would not make much difference for glue; "the hair would be strained out in the process of "straining the solution. The presence of hair does "not prevent the formation of glue." On page 281 he says: "I have seen skins made into glue without "liming."

And at page 285 he was asked:

"Q. Pieces of scraps, boiled with the hair on, without being limed, wouldn't the lime destroy the glue?"

"A. Well, that would depend upon the condition of the lime. If there was a great deal of caustic lime it would interfere with the jellying of the glue; but if the hides had been limed and allowed to lay for a few days exposed to the air—the carbonic acid of the air—*the lime would become carbonated and in that state would not do any harm*, nor would the hair do any harm."

At page 282 he says:

"I think that a great many of the precautions that the glue-maker resort to are for the purpose of

making a *glue that looks well and sells readily; not because the glue is any better* for many of the purposes for which it is employed."

He is posted on glue. "I cannot remember when "I did not have a glue pot" (p. 284).

The Milligan testimony and the production (p. 170) of a sample of what he alleges was made from "thin shavings or fleshings proper cut from the in- "side of the hide" (p. 172), after the hide itself had been treated (no one knows how) at the tannery, does not disprove the fact of "prior use" of hot liquid, undried glue, at Conneautville to line barrels. The complainant's witness (Plumer) says (p. 125, Int. 8): "Fleshings and shavings are the scrapings from the "inside of the hides when put upon the dressing "beam. This last is poor kind of stock, not worth "using." And this is what Milligan's sample was made from.

Sargent and Robinson did not use such stock, and for Milligan to produce in Court a bottle which (p. 169) contains "a mass of corruption," does not overcome the testimony of Sargent and others that from the stock procured at Hammon's tannery "glutinous material" was made at the refinery, which was used to line oil barrels there, and which answered the purpose satisfactorily.

2. *Prior use at Newton Falls, Ohio, by William H. Abbott, of Titusville, Penn.*

Mr. Abbott's testimony is at pages 246–252. He went to Newton Falls (which is about twenty miles from the Pennsylvania line) in 1844, and remained there in the general mercantile business until he came to Titusville, February 8, 1860. He says he has been mainly occupied in the oil business ever since.

On page 249 he says: "My first purchase was of a "$10,000 interest which I bought from Wm. Barns- "dall. It grew from that time until 1864. I had

" transaction running as high as $260,000 in a single " day. I had an interest in the Noble well which " netted me $2,500 a day. I was interested in the " second well that was drilled here. I built the first " refinery on Oil Creek. I built the first warehouse " at Union Mills for handling and shipping crude " oil. I built two 600 barrel tanks at Corry, the " first that were built there for the transfer of oil. " I cut down the trees and pulled out the stumps to " make a foundation for those tanks and building. " I secured the first ten covered cars for shipping " oil."

Mr. Zadock Martin testifies as to Mr. Abbott. He (Martin) is proprietor of the Hotel Brunswick, in Titusville. He says (p. 253) that " Mr. Abbott was " the moving spirit down there. He had all the " powder in him that was there " (referring to the Parker farm oil wells, where Martin was superintending the putting down of wells and the shipping of oil).

Mr. Martin was asked (p. 253):

" Q. *What is Mr. Abbott's general reputation here for truth and veracity?*

A. *Very good indeed.*

Q. Has he been prominent in the oil business in Titusville?

A. He was in the early days."

On page 250 Mr. Abbott, in reply to complainant's counsel, said: " I am slightly interested in the production of oil; have an interest in half a dozen mills (wells) at Allentown, N. Y.; am employing my hands in partially keeping the accounts of the Acme Oil Company (Titusville)."

These facts are set forth in support of Mr. Abbott's testimony, and because, in the brief submitted in the Court below in behalf of Leggett (himself pleading poverty as an excuse for laches) Mr. Abbott was

described as "another product of the oil regions, a "broken down oil refiner."

Mr. Abbott came to Titusville in February, 1860, and at once started in to ship from his wells the crude oil. The "common wood hooped barrels" leaked (p. 247). He tried to induce Bassett & Co. of Titusville to "make some iron-bound barrels," but did not succeed. "I then went to Newton Falls, "Ohio. This was all in 1860. I gave directions "there to some coopers who had been manufactur- "ing beef barrels and butter firkins for me for over "fifteen years (his name was John Sweeney), to make "me 200 barrels for crude oil, which he did. They "averaged about 41 gallons apiece. When they were "completed, *I took some tanner's scraps, rawhide,* "*put them into a large iron kettle, holding about* "*a barrel, which kettle I had used at Newton* "*Falls for rendering lard and tallow. I put water* "*in with the scraps and boiled it, testing it from* "*time to time on new staves not made into barrels.* "*When I got it to a consistency which I considered* "*pretty good glue, I put about three gallons of the* "*liquid boiling hot into the barrels and rinsed it* "*about to cover the whole inner surface with this* "*preparation.* * * * We filled the barrels here, "and shipped them to New York, where they were "emptied and returned to Titusville."

He says the scraps were bought of Thomas Gaskill, in May, 1860.

Mr. Abbott himself painted the barrels "with "chocolate colored mineral paint and linseed oil; "the paint was mixed at Akron, Ohio, and I called "it Ohio mud" (p. 248).

He tells where the boiling was done. "My recollec- "tion is that I put in about a bushel at first, and then "added scraps or water from time to time until I got

" the proper consistency—a fair quality of glue in " body and every other way; that is what I was " trying to arrive at."

On page 250, he again mentions what he bought at the tannery: " Rawhides, trimmings of hides " commonly called tanner's scraps; bought them at " different times; two or three different times; I " bought till I got enough."

Mr. Martin (p. 253) says: " We had other barrels " with iron hoops, which were shipped to us by Mr. " Abbott. * * * I filled them with oil, and " shipped them to New York, and they were re- " turned several times. * * * I can't distinctly " say how many barrels, but speaking within " bounds, I should say there were from 90 to 100 of " them."

On page 254, he says: " *Those were the first that* " *we had, and were the first iron-hooped barrels ever* " *shipped out of Titusville.*"

It is evident that Mr. Abbott tells the truth about these 200 barrels. He does not pretend that he ever had anything to do with lining refined oil barrels with liquid, undried glue, but these two hundred barrels were for his crude oil, and he was determined that he would have them, cost what they might. They were made for regular transit service to and from his wells. Complainant's witness Weiss (who never lined an oil barrel) thinks that Abbott could not have done what he swears he did do. And the witness Plumer thinks the lining could not have been " satisfactory."

But Mr. Abbott was, in those days, at any rate, a very active, thorough business man. And he put " satisfactory " linings in those barrels. To prove that they were destroyed by " wagoning " or by railroad transportation back and forth from New York to Titusville would not be proving that Abbott did

not line the barrels "satisfactorily" as Plumer did for the defendant at Cleveland.

The story of Abbott is a true story. As to what he put in the barrels, Prof. Chandler, who had read his evidence, says (p. 275) it was "glue." It was hot, liquid, undried glue, or else Abbott's reputation for veracity is undeserved, and he is a wilful perjurer as well as "a product of the oil regions and broken-down refiner."

3. Prior use at Richmond, Crawford County, Penn., by Warren W. Green.

The evidence of Warren W. Green is on pp. 238–246. He is a lumberman and farmer, and has lived in Richmond since 1836. In the spring of 1861 "he "built a cooper shop in Richmond, and continued "that business and the oil business till winter of "1865, or spring" (p. 239). He made at said shop nothing but oil barrels, and sold them to different parties in the oil region and at Erie, Pa. He testifies that he procured scraps of hides, cattle feet, &c., at different places in the vicinity, and that from these he made liquid glue with which he lined these oil barrels. He fully describes the process (pp. 239–40).

Prof. Chandler, after reading the evidence, said (p. 275) that the result of Green's process was "glue."

One of the parties named by Green as purchasers of said barrels was "Kennedy & Gagan," of Erie, Pa.—oil refiners. The complainant afterwards proved that said firm was "D. Kennedy & Co." (p. 187), and that Gagan was only an employee. Therefrom they conclude that Green's evidence is wholly untrue as to lining barrels with liquid glue.

And they claim that it is proved by their witnesses Gray and Van Buseck that D. Kennedy & Co. bought no oil barrels from Green, who commenced business in 1861 (p. 239) and continued till 1865.

The complainant's witness Gray was employed at Kennedy's. So was their witness John Van Buseck. But when did their employment begin, and when did it end?

Gray commenced in "the spring of 1863" (p. 1878). He had left before April, 1865, and he left "in the fall" (p. 184). That must have been the fall of 1863 or 1864.

John Van Buseck says (p. 191) that he commenced working "in the spring of 1864," and left "in the spring of 1869." He says that he and Gray left together.

Afterwards (p. 193) says it was 1868, not 1869. But he asserts that they left "about the same time."

Gray worked there "a year and a half" (see testimony, p. 178).

It certainly is very doubtful if Gray and Van Buseck were working at Kennedy's while Green was in the cooperage business at Richmond, viz., 1861 to 1865. At any rate there is no pretense that either Gray or Van Buseck were there in 1861, 1862 and the early part of 1863, or the winter of 1864–65.

Clemens Van Buseck, 79 years old, was a member of the firm and testified for complainant. He says (p. 187) that he "does not recollect Green or his barrels."

He remembers Gray, but not the superintendents who preceded him; does not remember in what year Gray left (p. 189); says that Gray did not buy any oil barrels (p. 190), nor did he (Van Buseck) buy all of such barrels.

He did not remember the names (p. 189) of parties who sold him oil between 1861 and 1865, and it is not strange that he did not remember the purchase of oil barrels from Green during these years.

Moreover, Green states that he sold them to other parties besides "Kennedy & Gagan." If he kept a

cooper shop for four years it is likely that he had more than one customer for his barrels.

He says (p. 239): "I sold to different parties," and he names (p. 240) Mr. Clintock, of Petroleum Centre.

Van Buseck's want of recollection and the testimony of witnesses who undoubtedly were not employed at Kennedy's till at least 1864, is not sufficient to disprove Green's statement that he made and sold the barrels from 1861 to winter of 1864–5 (p. 239).

Complainant's witness Clark (p. 194) was called to prove date of closing of the "John Brown Tannery." This was near Green's shop (p. 239), and Green stated that he "gathered up some of the glue scraps and pieces of hide about the tannery." The witness Clark says (p. 195) that the "tannery ceased running in 1860."

But even if the "John Brown Tannery" did stop running in 1860, it does not necessarily follow that Green was mistaken when he said, that he and Williams "and some of the other hands gathered "up some of the glue scraps and pieces of hide about "the tannery."

What could be more probable? Would there not be such scraps about the tannery yard? And would they not gather them up? To prove the closing of the tannery in 1860, does not establish that Green is untruthful in said statement.

AND GREEN'S "SCRAPS" WERE NOT ALL FROM THE OLD TANNERY. HE SAYS (p. 242) THAT THEY "ALSO GATHERED UP AROUND THE NEIGHBORHOOD "SUCH STUFF AS WOULD MAKE GLUE. IT WAS "CATTLE'S FEET, HIDE, AND SUCH STUFF AS WE COULD "GATHER UP WHEN FARMERS HAD BEEN BUTCHERING."

He would not have found cattle's feet at the tannery. And good glue is made of cattle's feet.

On page 244, Green says: "*Word was given out "that we wanted this material and it would be "gathered—boys would bring it; we would pay "something for it.*"

And yet the complainant's counsel seem to rely on the witness Clark's statement as to the closing of the "John Brown tannery some time in 1860," as overthrowing Green's evidence that Green and his men gathered up scraps there at any time thereafter (1861–65), or that Green and his men "gathered up "cattle's feet, hide and such stuff as we could "where the farmers had been butchering," or that Green did not "give out that we wanted the mate-"rial and it would be gathered, boys would bring it. "We would pay something for it." He would not be likely to "give out word" in this way to get scraps from the tannery, situated just across the road from his shop. And when he says that he obtained cattle's feet and such stuff "from where "farmers had been butchering," the complainant's counsel should not infer that he procured such material from the deserted "John Brown tannery."

The Court should consider what it is that Green is testifying about. He is not describing an old bicycle or telephone constructed by him thirty years ago. He is telling simply what he was doing thirty years ago; how he earned his living for four years in the little backwoods town of Richmond. There he has always lived. Is it likely that without any apparent object he would go on the stand and perjure himself, as is apparently claimed by complainant's counsel?

It is proved that he carried on the cooper shop. He tells how he lined barrels there. He did what Sargent did at Conneautville, and what Abbott did at Newton Falls. And when he tells to whom he sold the barrels is he lying? Counsel for a patentee who waited thirteen years before bringing the

suit on his patent should be careful how they criticise even uncorroborated testimony of a prior user testifying as to boiling "scraps," and putting the "undried liquid glue" into oil barrels which he made.

And here it is proper to say a word about Ransom H. Sargent. Being thoroughly familiar with the oil region, and with the men who were prominent there prior to complainant's "invention," he was "requested to interview (p. 255) and look up the "early oil business men with the view of getting "information."

He found his old partner (Robinson) at Conneautville and his old employee (Eldridge), and Abbott and Green, whom he had known years ago as connected with the oil business, *and both Robinson and Eldridge confirm his (Sargent's) evidence in the strongest manner.*

As to what he has done in this suit, Sargent says (p. 255): "There is no special employment, but I "expect to get paid for my services. I have received "nothing since my services commenced, not even "traveling expenses. I never was employed by the "Standard Oil Company for any purpose, at any "time, not directly or indirectly, or in any shape or "manner." And (p. 216) he states that he has never done any business with said company.

Twelfth Point.

A BARREL COATED WITH GLUE THAT HAS NEVER BEEN DRIED HAS NO FEATURES OR CHARACTERS TO DISTINGUISH IT FROM A BARREL THAT HAS BEEN COATED OR LINED WITH GLUE THAT HAS BEEN DRIED.

This was what the Examiner Hedrick wrote to Leggett's patent attorneys in February, 1874, when

they were seeking to reissue his patent (p. 314). No statement was made in the original patent or in the reissue application showing in what respect the barrel lined by Leggett's process was any better than a barrel lined by the old process. After said letter, not Leggett, but his attorneys, made a suggestion that the "distinguishing feature of the improvement "may be found on examination to be in the superior "integrity of the lining," &c. (p. 315). Thereafter the claim for the barrel was allowed, but *no single witness in this case, who has ever lined a barrel, testifies that a barrel lined by glue that has not been dried can be distinguished from a barrel lined with glue that has been dried.*

There is a little pretense in the testimony of the complainant that glue that has not been dried is a little more limpid or penetrating, but he admits that it may contain the same amount of water and the same amount of glue. Some of them say that glue that has not been dried has more strength or is of better quality, but nobody pretends that you can tell a barrel that has been lined with melted glue from a barrel lined with glue that has never been dried. *On the other hand, defendant's witnesses testify that there is absolutely no difference between barrels that are lined by one process and barrels that are lined by the other.*

(See Newcomb's testimony, p. 270.)

Mr. Newcomb has been at work for defendant as superintendent since 1872. In the first place, for the defendant at Cleveland, and afterwards at the Atlantic Refining Works and at the works near Bayonne, New Jersey. He testifies that during this time *they have always been lining their barrels at the Atlantic Refining Works with glue that has first been dried, and that at Bayonne they have done the same until the last year.* He testifies that since

1872 he has had charge of lining ten to fifteen thousand barrels a day, and that the books kept accurately report the barrels and leakages thereof, and that there is *nothing whatever in such report to indicate that barrels glued by the one process are superior better in any respect than barrels glued by the other.* The only advantage of gluing barrels by glue that the defendants make, is that they are sure to get a certain good quality of glue, and that they save the expense of drying. Mr. Newcomb testifies that the Standard Oil Company manufactures their own barrels, their own paint and their own cans, for the reason that they make their own glue, namely, that they can thus save money.

(See also to the same effect the testimony of Mr. Hopper, the manager of the Barrel Department of the defendant company, pp. 226, 228, 231, 232.)

Prof. Chandler testifies (pages 275–6) that he visited the barrel works at Bayonne, and saw them lining barrels, both with glue that had been dried and with glue that had not been dried, and that there was no possibility of distinguishing, by careful examination of the barrels, whether the barrels had been glued by the one or the other process.

If the defendants made their own glue and dried it they would get a pure glue, and if they made enough of it they would get it cheaper than they could buy it. If, making their own glue they use it for lining barrels before it is dried, they save the expense and risk of drying; using such a large quantity of glue, they have found it for their advantage to make their own glue, but a smaller manufacturer would not have found any advantage in making his own glue. The complainant's witness, Plumer, was asked why every carpenter did not

make his own glue; his answer was, "Why don't you keep a pig?" (page 144).

Mr. Plumer by this meant that it would be as absurd for every carpenter to make his own glue as it would be for every carpenter to keep his own pig. If a man keeps his own pig he can, perhaps, get better pork and can eat it when some people think it is best, that is, before it has been salted to preserve it. If a man makes his own glue, he can, perhaps, get better glue and can use it when it is best, that is, before it has been dried to preserve it; but in 1873 there was no more invention in Leggett's suggestion that the defendants should make their own glue, than there would have been in his suggesting that the defendants should keep their own pigs. The whole idea of the invention is absurd, and whatever there was in it was fully anticipated.

Thirteenth Point.

THE DECREE OF THE CIRCUIT COURT SHOULD BE AFFIRMED.

New York, April, 1893.

CHARLES C. BEAMAN,
JOSEPH H. CHOATE,
Of Counsel for Defendant.